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IMPROVEMENT

OF SCHOOL

BUILDINGS and

GROUND



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*Improvement  
of School Buildings  
and Grounds*

*State of Maine  
Educational Department  
1904*

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Copies of this pamphlet will be sent on application to W. W. Stetson,  
State Superintendent of Public Schools.  
Augusta, Maine.

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## IMPROVEMENT OF SCHOOL BUILDINGS AND GROUNDS.

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### WHAT HAS BEEN DONE IN OTHER STATES.

More than sixty years ago the well-known poet, Mrs. Lydia K. Sigourney, sounded the true note of progress in the improvement of the physical surroundings of the school in a paper read before a teachers' convention in Connecticut. Her words may be taken as an indication of the spirit that was even then beginning to manifest itself. She says, "I hope the time is coming when every isolated village schoolhouse shall be a temple on whose exterior the occupant may study the principles of symmetry and of grace. Why need the structures where the young are initiated into those virtues which make life beautiful be divorced from taste or devoid of comfort? Why should they not be erected in fine, airy situations, overshadowed with trees and embellished with shrubbery? Why should not the velvet turf attached to them be bordered with hedges, divided by gravel walks, tufted with flowers?" She further states that it is the testimony of teachers "That it is easier to enforce habits of neatness and order among objects whose taste and value make them worthy of care than amid that parsimony of apparatus whose very pitiful meanness operates as a temptation to waste and to destroy;" and she adds the suggestion still appropriate, "Let the communities now so anxious to raise the standard of education venture the experiment of a more liberal adornment of the buildings devoted to it."

During the last half century much has been done to improve our schools in the matters outlined in the above quotation. The State of Wisconsin has taken great interest in planting trees and in the protection of birds. Its Department of Public Instruction has issued an Arbor and Bird Day Annual since 1899. The vol-

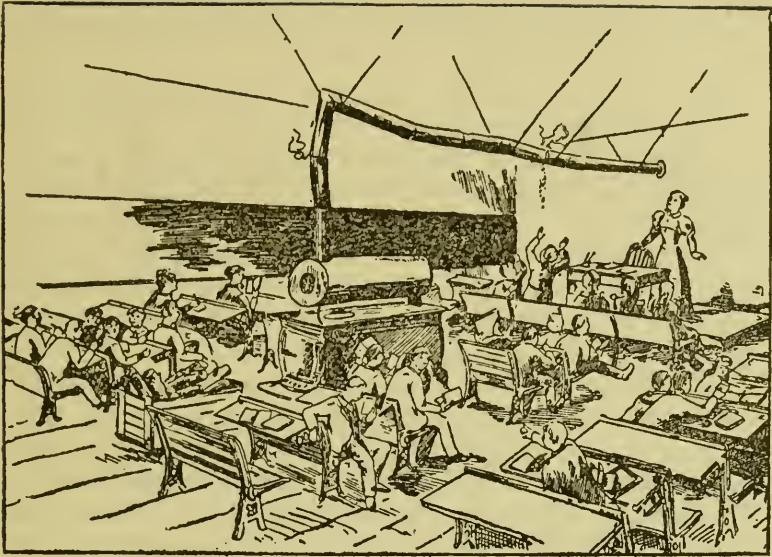
ume for 1903 contains excellent illustrations of school buildings and school grounds and indicates that the State has made great progress in this direction. One specially noteworthy article in this Annual gives an account of the improvements made within twenty years in the Dodgeville school grounds. Trees of attractive foliage and form were sought miles away in the woods, carefully taken up and reset in the school-yard. Hedges of arbor vitae were planted to screen the outbuildings. The grounds were graded and a handsome lawn secured. Each spring a coating of land plaster and ashes gave increased rapidity of growth and richness of coloring to the grass. Rustic baskets were made and flower beds planted; iron vases were provided and all these, when filled with flowers, made the grounds bright with beauty and color. Clematis, moon-seed, wisteria, Virginia creeper, and climbing roses were planted near the walls of the school buildings, and to-day their foliage almost covers these spaces and enhances the beauty of the architecture.

The school building is described as set well back from the road with a spacious, open area in front and playgrounds in the rear. A pansy bed is found in a shady corner, while clusters of foliage plants, a bed of cannas, one of geraniums, another of verbenas and a hedge of sweet peas make the enclosure a scene of great beauty. Rows of arbor vitæ partially shut off the playground; climbing roses nearly reach the second story windows and cover one side of the buildings with their showy blossoms; Virginia creepers already overarch the main entrance and will soon cover the entire front of the building.

The great interest the pupils have shown in this work from the beginning is one of its most charming features. In nearly every school the pupils can be enlisted in similar work and the moral results, the effect upon the spirit of the school, obtained by such co-operation, will more than repay the outlay of time and effort.

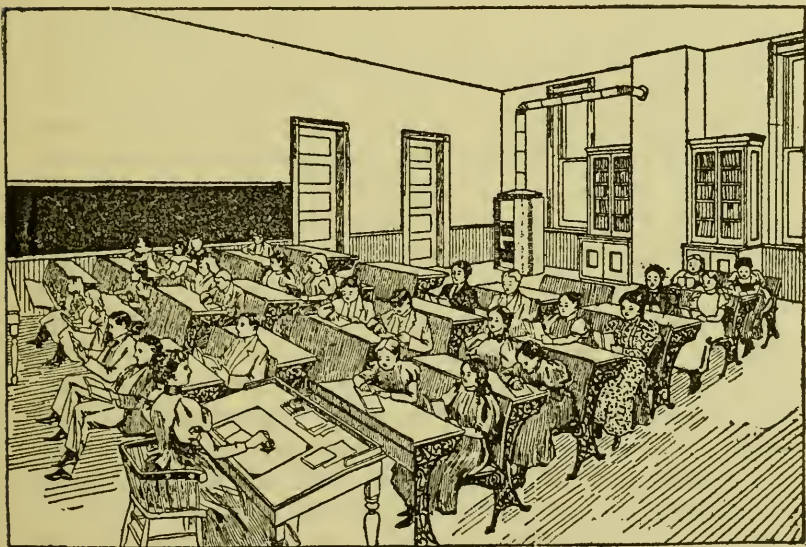
The Arbor Day Annual of the State of New York for 1903 has an article suggesting improvements that should be made in rural school buildings and grounds. It says it is almost impossible to find a village that has not a creditable school building and that some of the recent buildings in the larger cities are





THE BADLY ARRANGED SCHOOLROOM.

Disorder, idleness, mischief, discomfort, ill-temper, disease—due to unfavorable physical conditions.



THE WELL ARRANGED SCHOOLROOM.

Good order and industrious habits fostered, comfort and health promoted by favorable physical conditions.

veritables palaces; while, with some notable exceptions, in the rural sections the school buildings are not materially better than they were forty years ago.

The writer asks for at least an acre of land for each school lot; that this be fenced and graded, and states that it is far better for the children to do most of the work of beautifying the grounds because in this way they will value the improvements more highly and will more carefully protect them. He suggests that the teacher make a sketch of the grounds, showing the size and location of the buildings and enlist some competent person in preparing a plan for planting and grouping flowers and trees and locating walks and drives.

Much can be done with flowers at little cost. The neighbors will be glad to give phlox, iris and many other perennials. For covering an arbor or outbuilding, nothing is finer than clematis, with its beautiful clean foliage and its masses of white flowers. Honeysuckles will answer the same purpose. If roses are to be used, the crimson rambler will be found satisfactory. Of hardy bulbs, crocuses, tulips, peonies, irises are recommended; of annuals those should be selected which blossom while the school is in session, such as petunias, poppies, morning glories and nasturtiums.

If the children take charge of this work, there will result added knowledge, increased enthusiasm and an ever growing love for the school.

The wild flower garden of the Putnam school, Boston, was first planted in the spring of 1891 and, in the course of the first five years, 150 species of wild flowers were introduced. Among these were fourteen species of goldenrod, twenty of wild asters and other plants of field, forest and meadow, with twenty-eight species of ferns. To increase the beauty of the garden there were added hardy chrysanthemums, rose bushes, phlox, sunflowers, eleven kinds of iris, vines, etc. Most of the plants flourished in their new home, since care was taken to place them in conditions similar to those from which they were taken. They were used by the pupils in their elementary science lessons. The plants in bloom were described in written lessons and drawn with colored pencils or painted in water colors. Notebooks were kept and into these were pasted characteristic parts



of each plant studied; these books, taken into the country during the summer vacations, enabled the pupils to identify growing flowers, or to discover new species to be studied on their return.

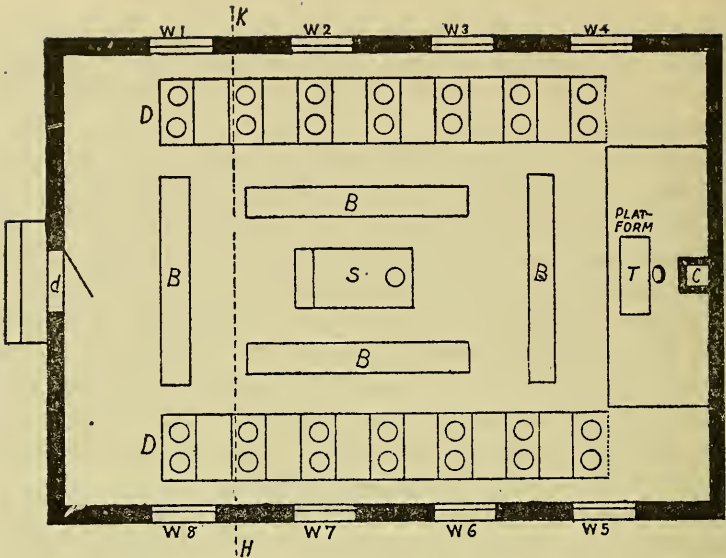
After three years' experience with the flower garden, a vacant lot near by was plowed and made into a vegetable garden.

Girls as well as boys took part in planting and caring for the garden, developing skill and endurance in the work and in some cases they insisted upon doing all the labor themselves, including even the first spading of the ground. Among the vegetables raised were summer squashes, beets, carrots, parsnips, onions, tomatoes, radishes, lettuce, corn, bush beans, cabbages and turnips. Parents became interested in the work done by the children and many home gardens of flowers and common vegetables were planted as the result of this training.

As was to be expected, the moral influence of this work upon the children has been most helpful. A sense of responsibility, the exercise of self-denial for the sake of future results, the training in industry and carefulness, these and other like considerations are to be added to the physical and intellectual benefits received. This experiment has proved that it is exceedingly helpful to school work for teachers and pupils to be bound together by common interests.

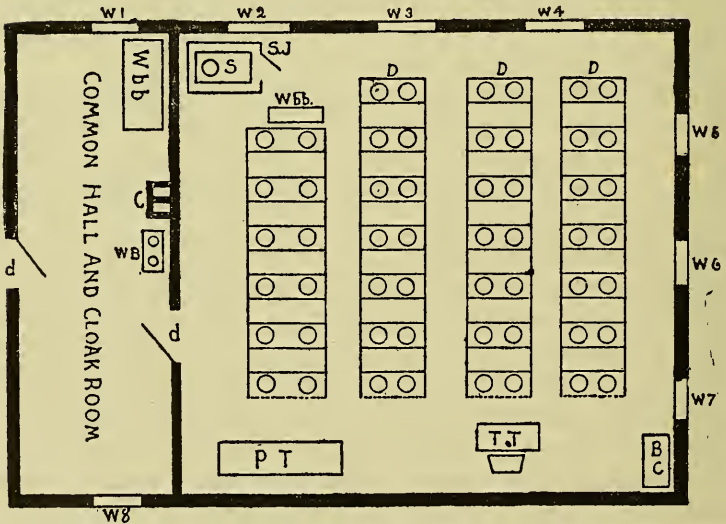
In the State of Vermont the Department of Education has recognized the newly awakened interest in Nature study by issuing circulars upon such topics as "Nature Study and School Homes," "The Trees of Vermont," "School Sanitation." "The Study of Trees" and "The Study of Birds."

The Rhode Island school report for 1901 contains a valuable article on the topic "School Gardens in Cities," treating of the work in Europe and the United States. The writer states that there are now over 100,000 school gardens in Europe, of which 5,000 are in Sweden, 30,000 in France and 10,000 have been made in the villages of Russia since the freeing of the serfs, in 1861. They were introduced into Germany 80 years ago. In Belgium, since 1873, the law has required each school to have a garden to be used in connection with instruction in botany, horticulture and agriculture. In France no plan for a school building, to which the state contributes, has been accepted since 1887



IMPROPERLY ARRANGED ONE ROOM SCHOOLHOUSE.

B—Bench, C—Chimney, D—Desks, d—Door, S—Stove,  
T—Teacher's Table, W—Window.



PROPERLY ARRANGED ONE ROOM SCHOOLHOUSE.

B C—Bookcase, C—Chimney, D—Desk, d—Door, P T—Primary  
Pupils' Table, S J—Stove Jacket, S—Stove, T T—Teacher's  
Table, W—Window, W bb—Wood Boxes, W B—Water  
Buckets.

unless it made provision for a garden. In the United States the work is more recent, but a good beginning has been made in various parts of the country.

The Hesperia movement of Michigan recognizes the need of a more intimate knowledge of the schools on the part of parents and other citizens. It seeks to meet this need through a series of meetings held in each county every year under the auspices of "Teachers' and Patrons' Associations." These meetings continue for a number of days and the programs include papers and discussions of school interests from the standpoint of parents, teachers and school officials.

In some counties of the State the Associations hold numerous local meetings with one general meeting during the year. The Associations, through their Executive Committees, prepare reading courses for their members.

The Teachers' and Patrons' Associations aim to bring about school improvement by means of a general quickening of public interest in the schools. They do not themselves undertake to accomplish specific results. These results they leave to be wrought out by the individual members.

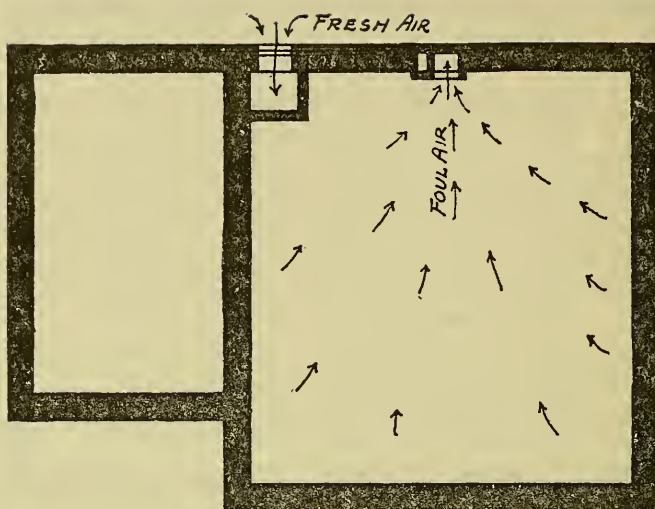
The expenses of the meetings are provided for by the annual membership fee which, in most Associations, is fifty cents.

A prominent factor in the success of the Hesperia movement has been the Grange in whose halls the meetings are usually held and whose officers and members have been prominent in promoting the Teachers' and Patrons' Associations.

This movement has been of incalculable benefit to the schools of Michigan because of the broader knowledge of their work and the more intimate acquaintance with their needs that have been gained by the people. Out of it have undoubtedly come many material improvements in the condition and surroundings of the Michigan schools.

The Georgia scheme of model schools aims primarily to show the importance of manual training in the rural schools.

The Federation of Women's Clubs of Georgia, appreciating the importance of manual training and domestic science, agreed to establish a model school in the county offering the greatest inducement.



### FOUNDATION PLAN

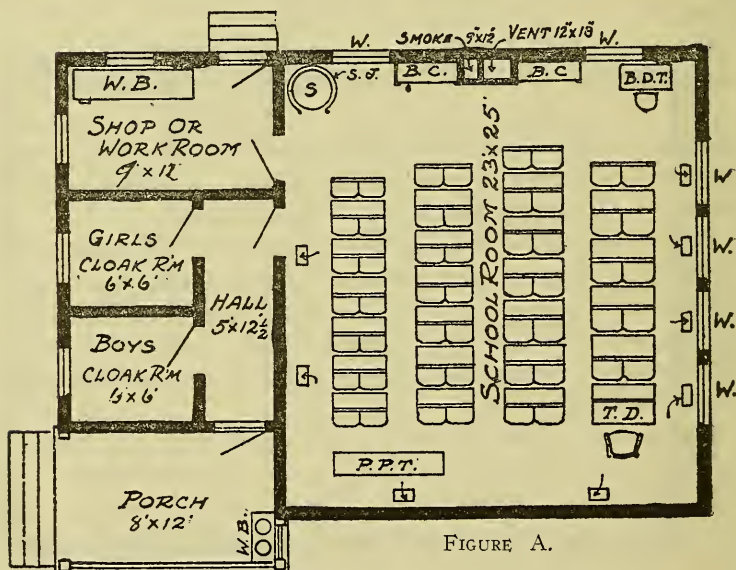


FIGURE A.

FLOOR PLAN FOR ONE ROOM RURAL SCHOOLHOUSE.

B C—Bookcase, B D T—Book and Dictionary Table, D—Doors, P P T—Primary Pupils' Table, S—Stove, S J—Stove Jacket, T D—Teacher's Desk, W—Windows, W B—Water Buckets, Arrows—Furnace Registers.

The school was established at Danielsville and has now in attendance two hundred and fifty pupils. As a result of its establishment three other counties of the State have been led to found similar schools.

Among the conditions that have to be met in establishing these schools are the following:—The school building and equipment shall be adequate, the surroundings neat and attractive and the teaching force trained and efficient.

These schools receive visits from citizens and teachers from other sections of the counties in which they are located and, as a result of these visits, the importance of better physical surroundings and trained teachers is seen. The lessons thus learned are helpful to all the schools of the State.

Georgia is making heroic efforts to raise the grade of her public schools. The scheme of county model schools furnishes a visible example of correct school conditions and is proving a helpful agency in bringing the schools of the State to a commendable standard.

#### VALUE OF THIS WORK.

As the general style of living improves, the school must keep pace with this march or cease to be one of the agencies in the world's progress. What was good enough for the fathers is not good enough for the children. The whole style of living has changed. The log house of the settler and the log school house for his children went appropriately together; but now, with our homes of comfort and beauty, corresponding changes must be made in our schoolrooms. In some cases these improvements have been made and the schools, with their equipment and surroundings, are in harmony with the other institutions of the community. In many instances, however, the schools have not received the attention they merit and it is evident the time has come for giving serious attention to their betterment. No one urges that we go back to stage coaches, to log cabins, to old-fashioned plows, to home-spun clothing, and no one should be content with former conditions for our schools, either in their appliances or methods. Mark Hopkins on one end of a log and the young Garfield on the other might illustrate, by keen dis-



cussion, the central life of a university; but no sane man would thereby argue that extensive buildings, spacious grounds and modern apparatus are not essential to the work the university must do today. What has been made to answer in the past will not do now; everything must be adjusted to the demands of the present and of the near future.

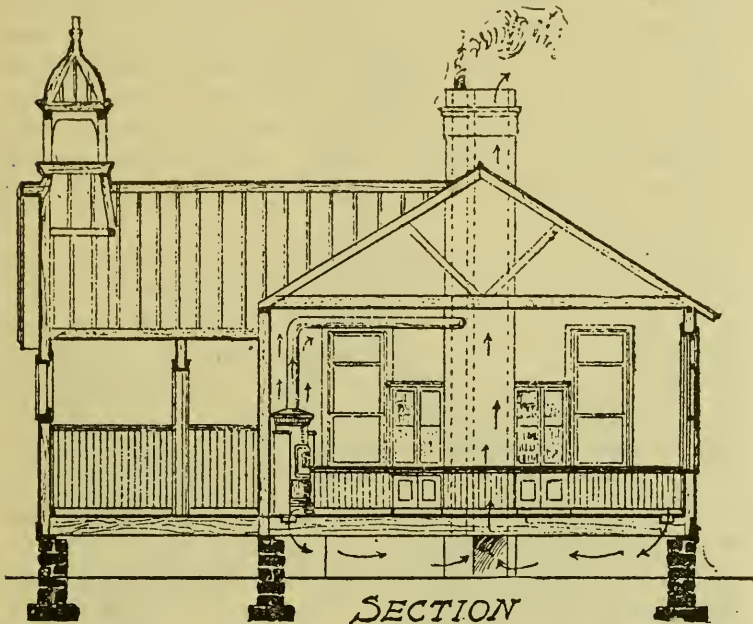
The needs of those who are to come after us must be taken into account, since many of the improvements to be made are intended to be permanent in their character. The extent of the grounds, the size of the school buildings, the trees and shrubs to be planted, these and many other things must be decided upon after taking into consideration the changed conditions which the passing years will bring. Every permanent improvement justifies a liberality of expenditure not warranted in any changes of a temporary nature. How often the mistake has been made of planning and building on too small a basis only to find that, in a few years, the growth of the community requires a complete reconstruction of the whole plant.

The sanitary arrangements should be carefully adjusted at the start and should thereafter be kept in the best possible condition. An "abomination of desolation" is none too strong a term to describe the outbuildings of some of our schools in the past, if not in the present. In our city and village schools, where there is a water supply, the best modern plumbing should be used and should be frequently inspected. In every case the utmost care should be taken that, in this matter, there be no occasion for offense either from a sanitary or æsthetic point of view.

Tasteful coloring of the walls and ceilings, appropriate pictures and other ornaments will give a cheerful, homelike appearance to the room that will add to its attractiveness and strengthen the hold of the school upon the heart and mind of the pupils. If children could only enter the schoolroom with the zest and gladness with which they leave it! And why not? Is it not true that "In every period of life the acquisition of knowledge is one of the most pleasing employments of the human mind, but in youth there are reasons which make it productive of higher enjoyment?" Make the schoolroom as beautiful as our best homes; let the kindly, cheerful spirit of the family be



brought into it; let the school building have a proper setting of lawn and trees and shrubbery and flowers; let it have its ample playground and school garden and, perhaps, the creeping with snail-like pace to school will be more rare. By a strange paradox the luxuries of life are sometimes more needful than the necessities: or perhaps a better statement would be that what some regard as luxuries in school furnishing are, from the right



A PRACTICAL AND ECONOMICAL ONE ROOM SCHOOLHOUSE.

Building plan. 26ft x 36ft outside measurement.

point of view, absolute necessities. As every advance in civilization makes new demands for greater conveniences of living, so every improvement in educational methods demands additional facilities.

The school building should be attractive without as well as within, made so not by excess of ornamentation, but by symmetry of form and simplicity of style. It would be difficult to estimate the influence for good of such a school home upon the

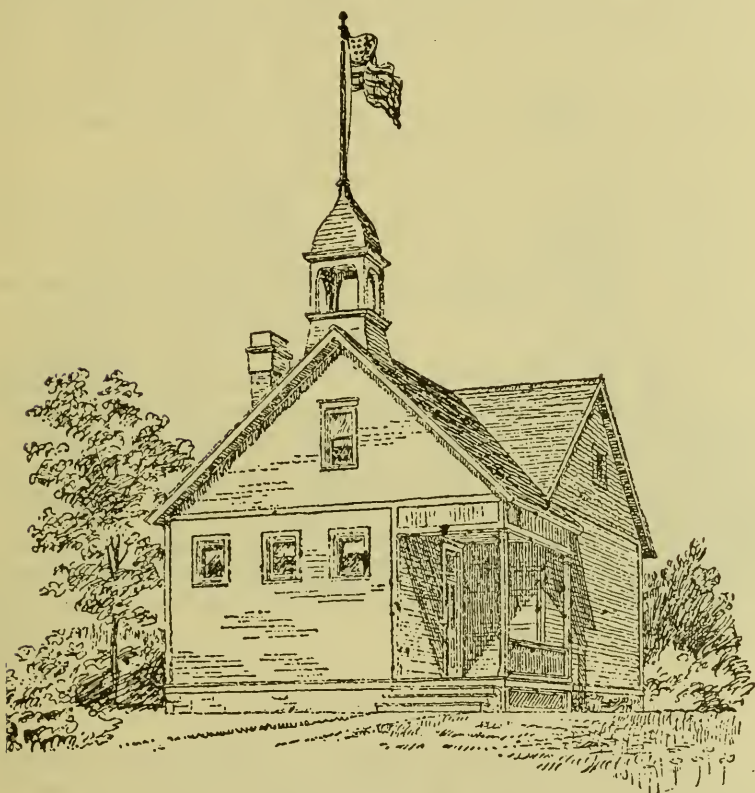
pupils and indeed upon the entire community. A true appreciation of the work of the school, as manifested by such surroundings, will tend to give it respect and dignity. The man of business who should model his store after the style of many of our school buildings would be doomed to failure from the start. In these days there are so many counter attractions, so many allurements to entice our children elsewhere, so many forms of amusement, so many inducements to short cuts and brief courses of study, that whatever will tend to bind our young people more closely to school and to home has an untold value and usefulness. If home and school are to compete with these temptations, they must be fortified with every excellence they can possess. Such considerations give additional weight to the statement that "It is a poor type of school nowadays that has not a good playground attached."

The question of school athletics has become an important one and, if our boys and young men are to participate in modern school games, there can surely be no place where they can do it more safely than on the school grounds, under the oversight of the school authorities. While the regular school work must never be neglected for these, they may be so regulated as to strengthen the bond of attachment for the school and to foster a school spirit that is most desirable. This spirit of loyalty to the school will find expression in a pride in the school grounds and in a readiness to assist in caring for them.

Even before any of our states observed Arbor Day, in some schools a day in the early spring was devoted to an excursion to the woods for trees and shrubs and the planting of these upon the school grounds. As every feeling becomes intensified by expression, so the interest of citizens and pupils in the school will be heightened if some such opportunity is given for its manifestation. By co-operation in this work a spirit of comradeship will be developed, binding together the school and its neighbors in a spirit of good fellowship. It is better that the children share in the work, or even be entirely responsible for it, than that these things be paid for by the town. The co-operation of the teachers and scholars, the kindly feeling engendered, a love for the school and loyalty to it, a taste for the beautiful and an elevating and refining influence that will be felt throughout the community are

among the results which give value to the work here suggested. The desire for improvement thus awakened will prove contagious and many a home will become a center of grace and culture.

The observance of the principles of neatness and order without the school building will have great influence upon the work within. Refinement, courtesy, accuracy will be more easily at-



A PERSPECTIVE VIEW OF NO. 7.

tained when the surrounding conditions are favorable. Environment is so potent a factor that its assistance is necessary to the best results.

The changes taking place in methods of education, the additions made to the number of subjects taught, the broader education now demanded for either business or professional life, the

strain and stress of modern school life with its tests, its examinations, its percentages, all these and other like considerations demand that the school work be pursued under the most helpful, cheerful and healthful conditions possible. With the increased wealth of the country and the rapid development of its resources, there is no good reason why every facility should not be given to secure the best possible training for the most important and valuable product of the age, the children. As school life is to play so large a part in shaping their character and destiny, it is not too much to ask for it the best attainable equipment and surroundings. Adequate and beautiful buildings, ample and attractive grounds and suitable appliances will be found to be the truest economy and the highest wisdom.

One important result coming from extensive grounds for city schools will be found in the increased interest in Nature and in rural life. An appreciation of the charms of the country fostered by the study of birds and flowers, by school gardens, lawns and groves may save many a one from the allurements of city life.

That farmer is wise who gives his children land for their own care and profit and, by papers, magazines, books and social opportunities, makes country life attractive. Improved forms of machinery have lessened the drudgery of the farm; horses now do much of the work formerly done by the slower oxen or by hand labor; rural free delivery brings the daily paper to the door and by giving the young people some definite share in the results of the labor of the farm we may help to retain them among the safer influences of rural life.

#### CONDITIONS IN MAINE.

The abolition of school districts, the employment of superintendents for city schools, the union of two or more smaller towns in a district for securing a trained superintendent, the consolidation of smaller schools and the free transportation of their pupils have done much towards that most to be desired end, the furnishing of "equal school privileges to all children of school age in the State."

As so many of our schools are in rural localities it may be thought that any project for the improvement of school buildings



and grounds would meet with little favor and result in slight benefit; but any one slightly acquainted with the facts can see at once the necessity of such action and realize its possibilities for good. The smallest as well as the largest school building in the State ought to be a thing of beauty. There is greater need of a finely modeled school edifice in a rural section than in a city. In the latter there are so many beautiful homes, churches and other buildings that additional examples are of less moment. A similar principle applies to the parks and public gardens of the city.



FRONT VIEW OF NO. 7.

These can never serve as substitutes for large open spaces around the school, nor can they be used as school gardens, but they may, perhaps, make the necessity for the latter less imperative. In a rural community where land is less expensive, where trees, wild flowers, ferns and shrubs are close at hand, there is no excuse for leaving the school lot desolate. The school garden may be less necessary where every family has a garden in its own home grounds, but it may be said that the school garden may, in competent hands, serve as a model that shall be of great benefit

to the whole neighborhood and so far as the wild flowers and ferns are concerned there is no danger that the school garden will suffer from any rivalry. Its mission of education is needed to open the eyes to the beautiful things that are close at hand and can be readily procured. The study of botany is immediately practical to those who have the largest opportunity of observation. Even the oldest inhabitant may have little knowledge of the botanical treasures that are lurking near by in swamp and woods and meadow. If the children have their interest early awakened in the plants and birds about them it will give to life an added zest and charm.

A well ordered, well kept school garden would not only give instruction in the best practical methods in horticulture, but would give an introduction to the plant life of the vicinity and, in many cases, would so open the eyes of the pupils and others influenced by them as to give a closer and happier relationship with Nature and a broader and more generous view of life. Improved methods and appliances in gardening would give an additional interest to life in the country. Why should not our children be taught to take something of that interest in Nature which so delights one in the writings of Thoreau or Emerson, of John Burroughs or of Bradford Torrey? To enrich the school life of the country boy with a wider knowledge of trees and flowers, of birds and other animals would be of great practical value to him in whatever circumstances his subsequent life might be spent. Interest in such objects is a source of perennial pleasure. One cherishes in memory special occasions of successes or surprises in finding rare flowers or unusual numbers of more common ones and enjoys again their beauty as Wordsworth so quaintly expresses it in his poem on "The Daffodils."

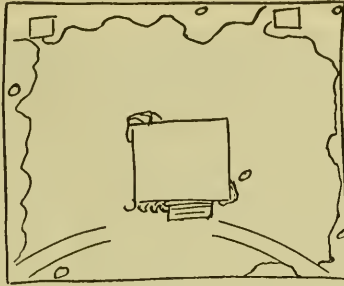
"I gazed and gazed, but little thought  
What wealth that show to me had brought.

For oft when on my couch I lie,  
In vacant or in pensive mood,  
They flash upon that inward eye  
Which is the bliss of solitude;  
And then my heart with pleasure fills  
And dances with the daffodils."

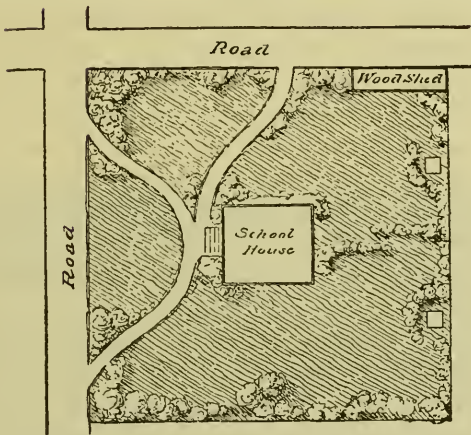
That education is practical which enables us to make all Nature tributary to our æsthetic enjoyment and mental and



moral growth. It is as important to learn the vegetable productions of one's own town as it is to know that tea is grown in



The blackboard plan.



Suggestions for the planting of a corner school-yard.

China or coffee in Brazil. Such knowledge sometimes has immediate practical value. Persons are often severely poisoned by handling plants poisonous to the touch of those who are sensitive to their influence.

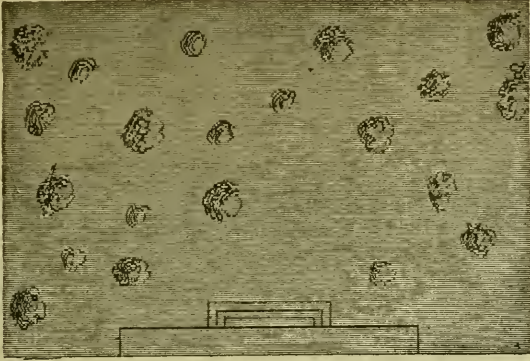
Better school buildings, furnishings, grounds, are important factors in the general progress of the State. The schools must furnish the best material surrounding and finest intellectual stimulus if they are to fulfil the constantly increasing demands laid upon them.

## HOW TO INTEREST PUPILS IN THIS WORK.

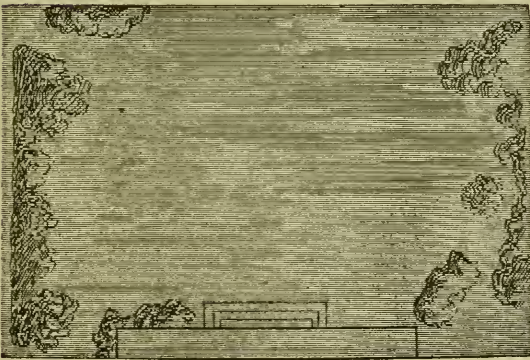
Our whole system of education exists, primarily, for the benefit of the children and, unless they are interested and have a share in everything connected with the school, they will reap but little advantage from what is done. They must be consulted and induced to co-operate from the beginning. The best help is that which teaches self-help. We must appeal to the desire to be of service. Nothing pleases a child more than to have the teacher ask for some trifling assistance which he can easily render. A wise teacher will attach her pupils to her by making them her assistants in various matters of school detail. Just as in a well regulated home children may be made to share in its work and held responsible for such matters as are within their ability, so both within and without the school they will be glad to co-operate in making changes and improvements. A special task may be assigned to a particular group in such a way that the assignment will be regarded as an honor and will indeed be considered a reward for faithfulness in school work. Some one of the group may be chosen leader and it will be found that a feeling of responsibility, a sense of usefulness, a joy in service may be developed that will have great value in many ways. If a spirit of emulation should arise, even this feeling may be utilized if care be taken that it does not degenerate into a spirit of unwholesome rivalry.

In some cases a particular day, May Day, for example, may be devoted to work upon the grounds, or to excursions to neighboring woods for trees, shrubs, flowering plants and ferns. If friends outside the school are asked to share in the excursion, the trip may result in enlisting the community in the work. It is a great gain when the pupils come to feel that the school is *their* school, and that *they* are responsible for making it what it ought to be. The results obtained by united effort in improving exterior conditions and interior arrangements will tend to more hearty co-operation in raising the work of the schoolroom itself to its highest standard. Sympathetic relations between teacher and scholars have great value, but good order, gained by kindly feeling, or with its accompaniment, cannot be too highly prized. That teacher is wise who permits her pupils to do helpful acts even when she could more easily do them herself, because the

greater the interest and share taken by the pupils in beautifying the grounds and rooms, the greater will be the value of these improvements to the school!



The common or nursery type of planting.



The proper or pictorial type of planting.

By tact the pupils may be led to do much for the development of a school spirit which will be of the utmost value. Committees may be appointed for special work, as a committee on bulbs for spring planting, on roses, wild or cultivated, on climbing plants, on wild flowers, on ferns, on the mowing of the lawn, or any one of the many things that need to be done.

Where there are regular courses and classes with graduation, the senior class may wish to do something to connect their names permanently with the school. A picture may be purchased, or a bust, or medallion, or clock; or a tree may be planted, or a flowering shrub, or some climbing plant and, if the custom be continued, in a few years valuable results will follow. Often the teacher will find it as needful to check and regulate as to awaken and foster the zeal of the pupils. The foregoing suggestions, if faithfully followed, will prove to be of great value in their influence on the school.

#### HOW TO AWAKEN AN INTEREST ON THE PART OF THE COMMUNITY.

This is a problem that may prove to be more difficult of solution; but as this co-operation is of vital importance to the success of the enterprise, it must be gained at whatever cost. On general principles it would seem best to proceed along the line of least resistance and consult first the person most likely to favor the movement. In splitting wood it is sometimes better to rive off pieces from the sides of the stick, where they cleave off easily, and leave the central knot to the last, unsplit if need be; in other cases strike first at the central difficulty and the rest is easy. It may be well to enlist first those who are the acknowledged leaders in the community while at the same time a special effort should be made to conciliate those who are likely to oppose the work.

If a majority of the citizens can be reached and made to feel the importance of the enterprise, that its success is necessary to bring the town into line with the general progress of the times, it ought not to be difficult to gain their support and thus bring the whole neighborhood into sympathy with the work. Want of interest in most cases grows out of lack of accurate knowledge and, if the facts in the case are stated clearly, patiently waiting until they be fully understood, most people will be found willing to provide for their children what they are convinced is needful for their good. It is natural for persons to desire to be consulted in relation to matters towards which they are expected to contribute. There must be no taxation without representation. The way in which the first steps are taken may make, or mar, the



work attempted. So long as it is true that, in any place, men have provided, relatively, more comfortable buildings for the housing of their dumb animals than for the schooling of their children, so long there will be, not only occasion, but urgent necessity for wisely directed missionary effort.

When sufficient interest shall have been developed a public meeting may be called and conditions and needs clearly outlined. The facts will speak for themselves, but there will be need of



This illustrates the school grounds after some years' growth, the grounds being originally laid out after plan shown in No. 1.

patience. The erection of a new building to replace the inadequate one that disgraces the town, the addition of land to the too meagre lot, the fencing of the grounds and their proper grading and planting, suitable furniture and equipment within, all these must usually come as a result of much discussion and of patient waiting. The general interests of the community demand that these things be furnished and all good citizens will be ready, when convinced of their need, to bear their part of the expense.

Parents are best reached and most interested in many of these matters through their children. The school and the home are so closely connected that hints, suggestions and talks given in the school will bring the subject into discussion at home. A definite

plan for the improvement of the school grounds will be likely to find approval and the needed assistance will be readily secured. The home surroundings will probably show the effects of the same spirit. Results far wider than those directly sought will be likely to follow. Pride in the school grounds and helpfulness in improving them will readily develop into an interest in school work.



A dainty bit of shrubbery.

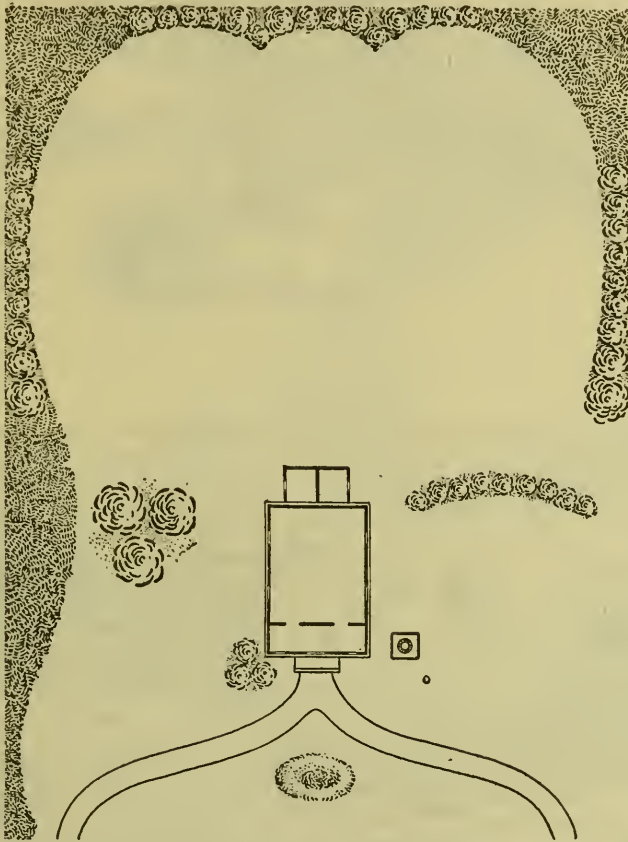
#### HOW TO SECURE THE ENLARGEMENT OF THE GROUNDS.

The size of the school lot depends upon the conception of what the school is to be. If it is to be a mere place for assigning and hearing lessons, a comparatively small area will be sufficient. But with an enlarged idea of the mission of the school as the center of a many sided busy life of study and recreation, of social and moral influences, of the learning of many things quite as important as a knowledge of books, larger grounds are imperatively demanded. It has been said that the school grounds are the theatre where elementary problems of society and citizenship are worked out through the independent action of the child at



play. Play is too important an element in child growth to be hampered even for the purpose of preserving beautiful lawns and artistic flower beds.

Ample playgrounds are essential to that vigorous health without which the mind cannot be alert and vigorous in its grasp of truth. Suitable spaces must separate the school from any



**SKETCH OF PLANTING**

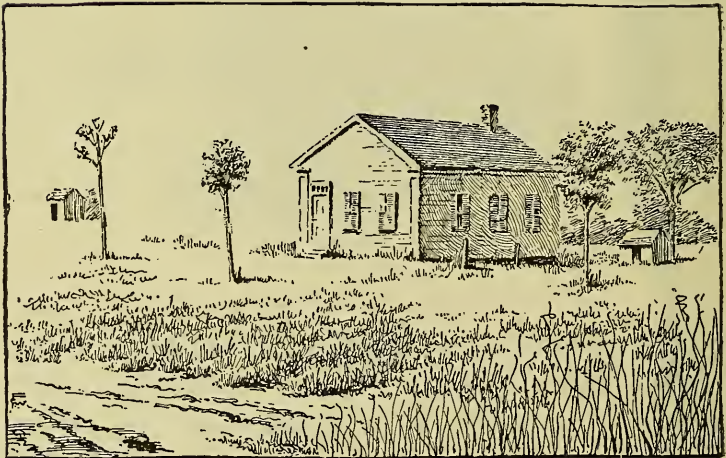
Plan No. 1.

possible source of disturbance or contamination, physical or moral. If pure air is to be secured; if there are to be trees and shrubbery and flowers and walks; if the birds are to be welcomed; if all the surroundings are to be beautiful and healthful and uplifting, then larger grounds are needed. An acre will serve, but three or five acres would be much better. It is an

important question how this enlarged conception and its full realization can be secured. The friends of the movement must have a clear conviction of the necessity for additional grounds and then must do missionary work to convince all persons concerned that the proposed plans are reasonable and practicable.



A border planting of trees.

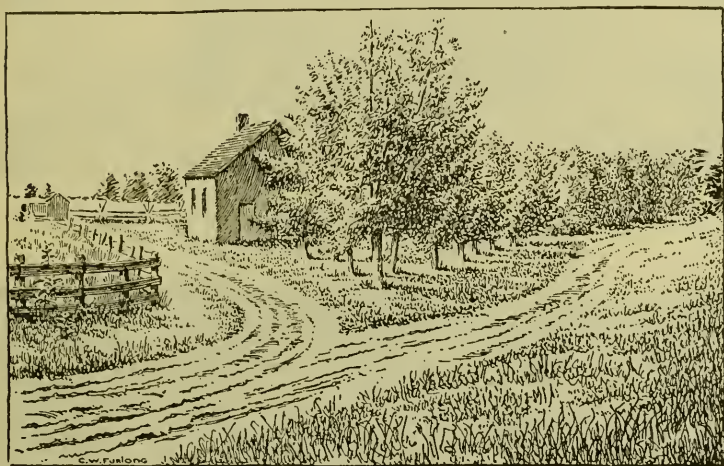


Trees enough in the center, but the place needs a background.

When the citizens are aroused to a sense of the necessity of doing something the means for accomplishing the desired object will usually be found. Sometimes it will come by gifts from some person of wealth, sometimes by solicited subscriptions, sometimes by appropriations voted by the town.

The larger the city and the more compact its population, the greater the necessity for ample areas about the school buildings. Most unfortunate are the city children whose school lot is so small that the steps from the school doors lead directly to the brick pavements of the street and the rear court is a tiny space shut in by iron fences.

The school may become an annoyance to its neighbors if it be placed too near them. It should be so retired that it will not be disturbed by the distractions of the street, or by any noisy vocation that may be carried on near by; it should also be so secluded that the shouting of the children at their sports will not be a source of disturbance even to their nearest neighbors. The joyous clamor of the school grounds is an essential part of the school life and must not be prohibited by command or surroundings.



A row of willows makes the place attractive.

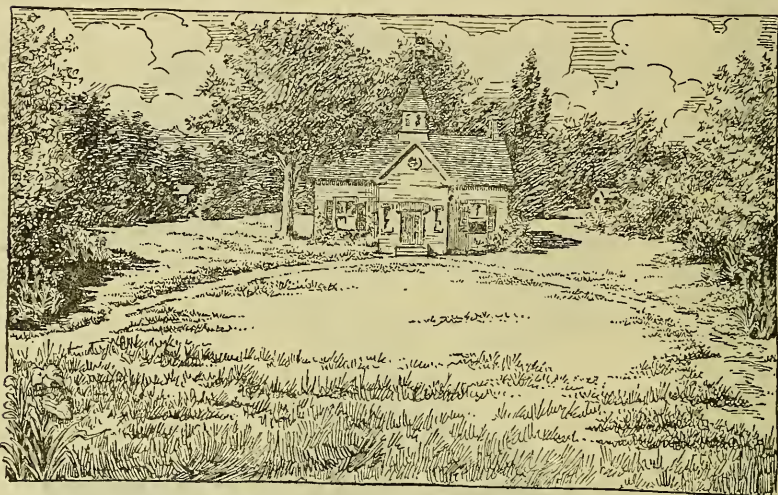
#### HOW TO LAY OUT THE GROUNDS.

This will depend upon the size of the lot and how much is to be contained in it. If provision is to be made upon the school lot for athletic playgrounds then they should be well removed from the school building and laid out according to the established rules given in the manuals on the respective games. These should not usurp the place of the general playground, which should be placed well back from the street, but nearer to the school building.

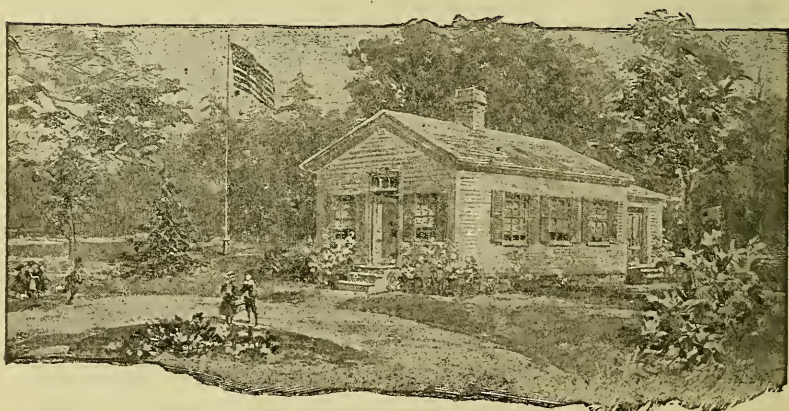


The school building itself should stand at least 100 ft. from the street line and, if possible, at about the same distance from the nearer side of the lot.

Elm trees, or trees of a similar growth, may be placed at intervals along the street front in a single row so far apart that their



A picture of which a schoolhouse is the central figure.



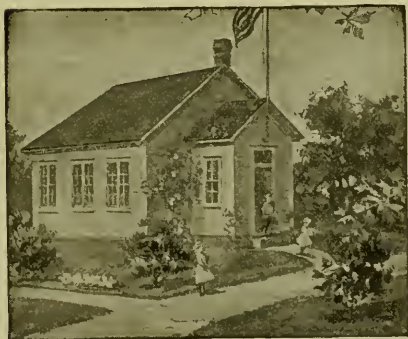
An attractive schoolhouse and grounds.

branches will never meet, but no low growing trees or shrubbery should obscure the view of the building from the street. If there be one front, main entrance, there may be one wide straight walk from the street to the front door; but usually it would be prefer-

able to have two winding paths meeting at the front door thus leaving the space in front to be occupied by a well kept lawn. The paths may begin near the outer limits of the lot describing graceful curves across the grounds and bordered by low shrubs or flowering bushes such as roses, weigeliass, or hardy hydrangeas. The inner sides of the walks next to the front of the lawn may be lined by narrow beds of low flowering shrubs or hardy



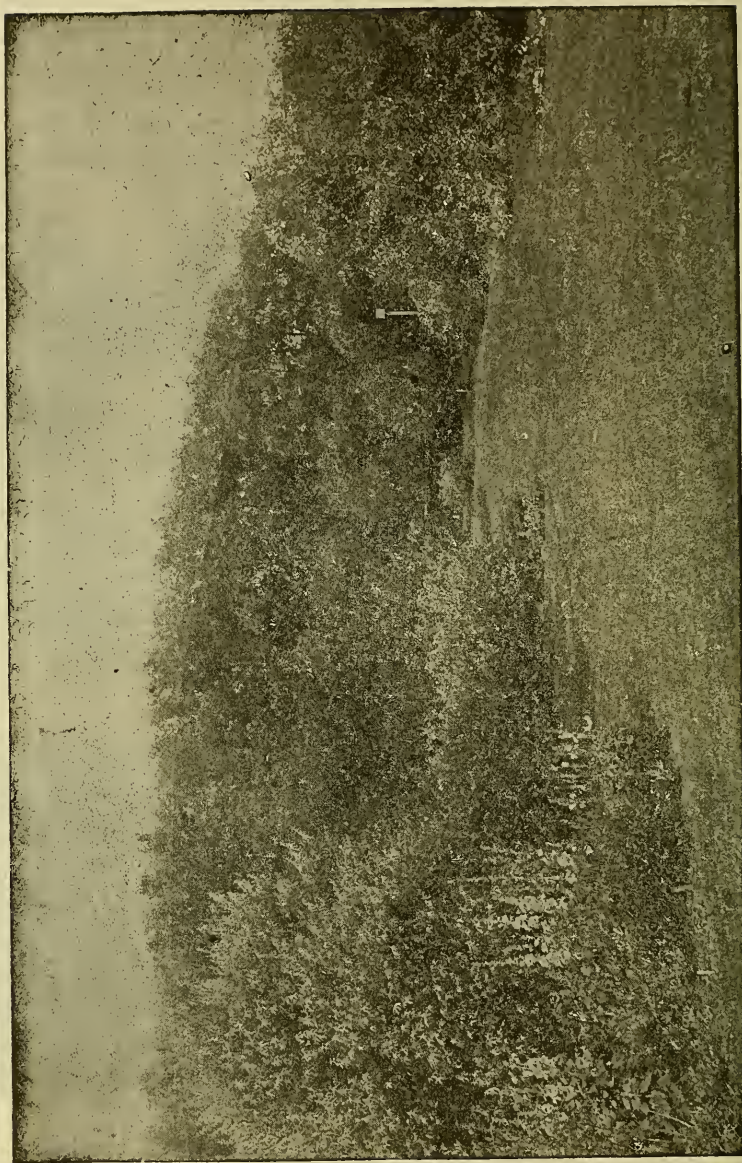
School grounds. From a photograph.



The same grounds beautified.

perennials, or these beds may be planted with hardy bulbs for early flowering, with annuals planted among them for later blooming. A few beds of showy flowers may be placed on either or both sides of the buildings, but the wild flower garden and the vegetable garden would better be placed farther back. The entire lot, except the street line on the front or on two sides, if the lot is a corner one, may properly be surrounded by an irregular, somewhat compact and varied mass of trees and shrubbery of differ-





A five years' growth.



ent sizes and styles of growth, comprising maples, chestnuts, birches, ashes, cherries, walnuts, oaks, spruces, firs, hemlocks, larches, willows and even alders and hazels, if the conditions are favorable. The idea is not to show the beauty of a single tree, but to border the grounds by varied groups and masses in such a way as to make a fitting frame work to enclose the picture which the buildings and more open grounds around it are to form. A neat fence may be placed around the whole, if local conditions render it necessary. Even then the more completely the fence is hidden from within the lot, by its screen of variegated hedgerow, the better. It should not be necessary, in any well conducted community, to fence the street line. There should be no trees so near the school-houses as to shade any considerable portion of the building or to conceal any part of the picture which the entire school premises are to form. What would answer well enough for nursery or orchard planting is entirely out of place on school grounds and, however else the trees may be set, they must not be made to stand in straight lines. In setting trees, a better effect will be secured if they are crowded more closely together than they can stand later; then if some of the trees should fail to establish themselves, they will be less missed. They must be remorselessly cut out and thinned to the desired distance as soon as they begin to encroach upon one another.

If lack of a water system for the town compels the use of out-houses, then these may be screened by well arranged clusters of arbor vitæ, spruce or fir and a compact, broad line of these trees may soon replace the high fences or screens which are at first necessary. Nothing should be tolerated on the school grounds which would be objectionable on the best regulated home grounds in the community. All the influences surrounding our children should be as refining and elevating as possible.

#### HOW TO GRADE THE GROUNDS.

It would be better not to grade the grounds, than to reduce them to that dead level which many persons seem to think the normal condition for the school lot. The fields and courts for the athletic games should be nearly or quite level. In other

parts, as the lawns and gardens, there may be some considerable differences of elevation. The proper drainage of every part is most essential. The school building must be located in an airy, dry, slightly elevated position with good drainage in every direction. No part of the lot should be so low as to receive the washings from adjoining property. Such considerations are the more important in places where there is no regular system of sewerage. The building should stand well above the street level so that the surface of the front part of the lot may slope gradually to the street and still be sufficiently elevated not to be injuriously affected by any probable raising of the grade of the road in front of the grounds.

The schoolhouse should be so placed as to have a gradual slope on the other three sides of the lot. The grade of the lot must be decided upon before the walls of the cellar are laid and certain parts may be lowered and others raised, as may be needed, at any time before the building is occupied.

The basement walls should rise at least three and one-half feet above the grade of the earth outside. The windows in these walls should be large enough to keep the basement well lighted and thoroughly ventilated. The condition of this room is very important and any neglect at this point is dangerous to the health of the entire school.

No school can be either safe or successful that is not provided with pure air and pure water. The water must come from a spring or carefully guarded well.

#### LOCATION OF DRIVES AND WALKS.

If the lot be comparatively small, the only road needed is one leading to the rear of the building for the conveyance of the fuel supply. The same road may also be used for admission of pupils to the rear or side entrance and it would preferably enter the grounds from some other roadway than the one in front of the school. But if the lot be as large as has been previously suggested, a winding road may be made from the street in front of the grounds to the side entrances or to short paths leading to the front entrance. These drives may wind through different parts of the grounds as desired and they should be bordered by flower beds, flowering shrubs and the smaller trees. These roads

will be so little used that they may serve as walks as well as drives; but narrower, curving footpaths may be added for reaching the flower garden, the wild flowers, the vegetable garden or play grounds.

If the drives enter the grounds at two places from the road in front, then one of these entrances may be used, exclusively, for entering the school premises and the other for leaving them and in that case the drives need not be as wide as if there were to be frequent passing of one carriage by another.

The line between the paths and the drives on the one side and the lawn and turf on the other should be made clear-cut and should be kept so. They should be slightly rounded, well graveled and properly cared for.

If the school grounds are made as beautiful as they ought to be, parents and friends of the pupils and even strangers will be glad to inspect them and all such visits should be welcomed as tending to give new interest in their proper care. Attractive and convenient grounds will stimulate pupils to take greater pride and interest in their school.

#### PLANTING TREES, FLOWERS AND SHRUBS.

Whoever plants a tree, in a proper position, becomes thereby a public benefactor. More than seventy years ago a man who had just built a house in one of our Maine villages went into the woods and found a small elm tree that divided near the ground into two trunks. He carried the tree to his home, separated the two with an axe and planted one on either side of the space before the house. Now they are magnificent trees, almost unrivaled in their symmetrical beauty. The trees remain, a living monument to the prevision of him who planted them. A long look ahead is what every one must take who would plant trees correctly. He must see, not the small tree he is setting, but the tree that is to be, long after he is gone.

With ordinary means for transporting, small trees should be selected rather than larger ones. For elms and maples, eight or ten feet high is about the right size. These establish themselves more quickly than larger trees, are less injured by removal and are more likely to live. The extra work needed to remove and replant, correctly, the trees chosen, will be more than repaid by

the increased probability of their living and the greater rapidity of growth. A space about five or six feet in diameter should be carefully spaded to the depth of at least two feet. The soil should then be thoroughly broken and, unless already very rich, should be mixed with good loam and with fine manure. For the actual setting out of the trees doubtless no better directions could be suggested than those given by the Forestry Division of the Agricultural Department at Washington.

"Planting is best done by two or three persons. A, who manipulates the tree, is the planter and is responsible for the results. B and C do the spading under his direction. A places the tree in a hole to ascertain whether this is the proper size; a broad stick laid across the hole aids in judging the depth. Trees should not be set deeper than they were before except in loose, poor soil. More trees are killed by too deep planting than the reverse." As an illustration of this point it may be stated that trees are frequently killed, without removal, by raising the grade so that the soil is raised about their trunks a few inches higher than before. Valuable trees are frequently destroyed in this way. "If the root system is developed sidewise, but not centrally, as is often the case, a hill is raised in the hole to fill out the hollow space in the root system and the earth of the hill is patted down with the spade."

"When the hole is in proper order, A holds the tree perpendicularly in the middle of the hole, with the side bearing the fullest branches towards the south or the southeast, for better protection of the shaft against the sun. B and C spread the roots into a natural position and then fill in the soil, using the good surface soil first,—small spadefuls deliberately thrown over the roots in all directions,—while A, by a slight shaking and pumping up and down of the stem, aids the earth in settling around the rootlets, which should also be aided by hand and fingers filling in every crevice. A, while setting the tree, must exercise care to keep it in proper position and perpendicular, until the soil is packed so as to keep the tree in place. Then B and C rapidly fill the hole, A treading the soil firmly down after a sufficient quantity is filled in, finishing off a little above the general level to allow for settling and, finally, placing stones or any mulching around the stem." "Do not use water while planting unless it is very carefully applied with a 'rose' after the soil is filled in and packed

around the fibrous roots. It is not uncommon to see water poured in the hole while it is being filled up. This practice does harm rather than good, for it washes the fine soil away from close contact with the roots, leaving empty spaces between the roots, or even leaving, as the water dries and the earth hardens, the little rootlets in the midst of hollows like the inside of pipe-stems. In such a case they cannot touch the earth which gives them nutriment and they die. More trees are killed by too much water in transplanting than by too little. Water after the transplanting is useful, and should be applied during the hot season, the late afternoon or evening being chosen for its application."

Great care is also necessary in taking up the trees and protecting them until they are reset. If the tree is small and is to be moved but a short distance, it may be well to take up a ball of earth and allow it to remain on the roots; but this would be an exception to the general rule. It might answer for a small pine or other evergreen, not more than three or four feet high, and some very excellent results are secured in this way. Ordinarily it is better to remove the original soil, taking great care to preserve as many of the smaller roots as possible and to protect these carefully from drying by exposure to sun or wind. It is not best to lop off the branches or cut the top off squarely, according to a too common custom, until what is left resembles a beanpole. A plant breathes through its leaves and, if it is to live and thrive, it must have a chance to develop a large amount of leaf surface. The loss of root surface, which will be slight if proper care is used, may be balanced by a judicious thinning out of the branches. Small branches may be cut off close to the trunk without harm. If no stump or projecting knot is left, the tree will soon cover the wound with new bark and decay will not penetrate to the heart of the tree. The same rule is to be followed in all pruning, namely, cut off the branch or limb as close to the parent branch or trunk as possible. After the tree has been well set it may be mulched with straw, spent tan bark, meadow hay or lawn clippings. The tree must not be used as a hitching post. If a drouth should occur before the trees are well established and the leaves show signs of withering, the surface soil should be loosened, enriched with fresh loam or fertilizer and then water given as needed. Fresh food will be necessary as well as water. Deciduous trees may be transplanted in the



early spring before the leaf buds have opened; evergreen trees may be planted later.

For many parts of the school grounds shrubs are more appropriate than trees and may be placed nearer the school building. In some cases, as where the basement wall extends well above the ground, they may soften the hard, angular lines between the house and the ground and thus form masses of foliage about the base of the building. The hardy hydrangeas, spireas, syringas, lilacs, viburnums and elders are among the shrubs that may be used for this purpose. A hedge of common wild roses would be attractive when in bloom and not displeasing when not in flower. Fortunately we have many shrubs that well deserve a place in the school yard. The hobble-bush is beautiful in blossom and in its foliage; the high cranberry and its sterile form, the snowball, the elders, willows, dogwood, sumac, witch-hazel, thorn apple, mountain ash and others may also be used. The sides of the school lot not lying along the street should be lined with an irregular mass of trees and shrubs that should more nearly resemble the broken edges of our native woods than the prim straight line in which trees are often set.

If the schoolhouse is of brick or stone, then the bare walls may be broken into smaller spaces by ivy, clematis and woodbine. If the building be of wood, the vines may be supported on trellises. Vines are not so appropriate for a wooden building, on account of the painting required by such buildings, but, by the use of proper care, the trellis may be placed far enough from the wall to permit of painting without destroying the plant.

There are endless varieties of flowers which may be used to add beauty and charm to the school lot. In many cases these can be obtained with but slight cost from the homes and gardens of the neighborhood. Others may be purchased at small expense. Bulbs of crocuses, tulips and hyacinths, planted in the fall for spring blooming, are easily cared for and are very effective. Many hardy bulbs once planted will continue to afford an abundance of flowers for several years. Lilies, peonies, irises and similar plants continue from year to year with little care. Many hardy perennials give like results. Constant care is necessary for the greatest measure of success, but little care is repaid by rewards well worth the having. When the soil has been properly prepared by digging, pulverizing and enriching, then

asters, petunias, poppies, phlox, verbenas and, for climbers, sweet peas, morning glories, nasturtiums and many others may be planted and cared for with confident hope of success.

If seeds are purchased from responsible dealers the directions on the packages may be safely followed. It will generally be found more satisfactory to have many varieties and large numbers of some special flowers as dahlias, tulips, lilies and geraniums, rather than to introduce a great number of different species or novelties. Twenty varieties of the dahlia would make a beautiful hedge or a large bed. The same might be said of tulips, lilies, hyacinths, petunias, verbenas, so far as their adding effectiveness to each other is concerned. Many varieties of sweet peas may be put together and each enhance the beauty of the other; the same is true of nasturtiums and many other plants.

The planting of wild flowers and ferns must not be forgotten. As our forests are felled and the land cleared and cultivated, many of our wild flowers become rarer and will soon be exterminated unless care is taken to perpetuate them. The secret of success in such effort lies in closely studying the natural conditions and carefully reproducing them. Plants often respond to cultivation with increased size and beauty. The spring beauty, Dutchman's breeches, hepatica, anemone, bloodroot, partridge vine, violet, adder's tongue, columbine, swamp pink, aster, goldenrod, ferns and other wild plants, if carefully transplanted, will be a source of great benefit and pleasure. They are often the most interesting where they are least known.

#### LOCATION AND PREPARATION OF PLAYGROUNDS.

Playgrounds are an absolute necessity. This necessity is felt more to-day than ever before and is destined to grow stronger each year. In all our cities and villages the day has passed when pupils may safely use the street as a playground. Play is as essential a part of the child's life and as useful to him as is study or any form of work. It would be difficult to find any part of the day that does as much for the mental, moral and physical welfare of the child as the time spent upon the playground. The additional strength given by exercise is only one part of the benefit received. The playground is a little world with its own problems and interest. On this arena tact, management, leadership, quickness of thought and action and many other qualities

come into use. Here also lessons are learned and acquaintances formed that will not soon be forgotten. The teachers should have a watchful care over these sports, by sharing in them, or by general oversight, as circumstances in each case may dictate.

Playgrounds may be divided into two classes—those for ordinary play and plays which the children may extemporize for the occasion and those arranged for sports under the general name of “athletics.” For the first class there should be two or more plots, near the schoolhouse itself, to be used at recess and for short periods before or after school. They should be large enough to accommodate two or more different games at the same time.

The place selected should be plowed, leveled, underdrained and, if necessary, overlaid with coarse, followed by finer gravel and well rolled. A slight slope will carry off the water and there should be no depressions where water may stand, or clayey places to become muddy. The fields designed for athletics may be farther away and, for their size and plotting, hand books of the several games should be consulted. The place these games shall occupy in school life, how they shall be regulated, whether match games shall be allowed between different schools, are among the most important questions of our present educational system. It may at least be said that all such games should be permitted only under proper supervision and regulation by the school authorities. They should be so conducted as to be untainted by any suspicion of professionalism or unfairness. This result may be more easily secured on grounds that are under school control and for this and other obvious reasons it is desirable that the school lot be large enough to include such grounds.

#### LOCATION AND USE OF SCHOOL GARDENS.

The area chosen for the school garden must, of necessity, vary with the size and shape of the lot. If the width of the lot is sufficient to permit, the flower beds may be placed near the front on the outer side of the drives which enter and leave the grounds on each side of the front lawn. They may extend back as far as the playground which may reach across the lot in the rear of the building, being divided from the other spaces by a hedge or screen as before stated. In the rear of the playgrounds may be placed the vegetable garden and, back of that, the wild flowers,

ending with ferns, shrubbery and trees. The order on each side of the lot from the street to the rear would then be, beds of flowers, playground, vegetable garden, wild flowers, ferns, shrubbery and trees. Somewhere among these shrubs and trees may be damp places where the mossy soil would be fitted for some of our more delicate flowers like the calypas and the cypripediums. From side to side across the front, back of its line of elms, the order would be, trees and shrubbery, flower beds, drive, low shrubs, walk, lawn, walk, low shrubs, drive, flower beds, shrubbery and trees.

In city and country alike, the school garden has possibilities of great usefulness. The knowledge of plants gained in it may easily lead to the study of plants in other gardens, fields, woods, or river banks, and many a subject for story, description, or essay may thus be gathered. The best language lesson is one in which the pupil has something definite to say and is taught to say it correctly. It is hard enough for older people to evolve out of their inner consciousness ideas for expression and it is little short of cruelty to expect these results of children. The work of the school garden, a walk in the neighborhood, an informal talk about topics of common interest arising in connection therewith, may be followed by a written exercise that will be full of life and interest. Given something to say, the pupil will find some way to say it.

The writings of Bradford Torrey, John Burroughs and many others will show how close may be the connection between clearness of observation and beauty of style. If children have at hand materials for observation, they can be the more readily taught how to put this material into correct language.

An observing teacher will find on the school grounds many objects to be made use of in his school work. In one school in our State, having groups of trees upon its grounds, a teacher had just described to his pupils the habits of the butcher bird in killing small birds and impaling them upon thorns when, looking from the window, he saw the tragedy enacted under his eyes at the very moment and was able at once to direct the attention of the class to the practical illustration of his teaching. Another teacher recalls with interest, after the lapse of more than twenty-five years, an essay written by a young man in which he gave a definite account of what he had learned by careful observation of



the habits of the chickadees in the trees near his home. What one sees clearly he can express the more vividly.

Excellent material for lessons in drawing with pencil or in colors may be found in the plants and flowers of the school garden. A branch from a wild rose bush, with buds and flowers and leaves, will form a much more attractive subject for drawing and color work than any object which lacks the charm of living reality. The advantages to be gained from lessons in practical gardening should also not be overlooked. Planting seeds in boxes and watching the various stages in plant development, now almost universally employed in our best schools in lessons on plants, may profitably be extended to out-of-door work. Such subjects as the best preparation of the soil for different seeds, the care of the young plants, the transplanting of seedlings, the space required for each, how to protect them from insects or other dangers, the cultivation needed at different stages of growth, hoeing, weeding, how to gather the results in the fall and the best methods of storing them for the winter can best be taught in the way indicated above. From all these exercises there will come a practical education and manual training that will be of great value, to say nothing of the reward in health and pleasure.

If hotbeds and a greenhouse are added, then instruction may cover a larger portion of the year and be enhanced in value. The closer relations between teacher and pupil and between the school and community, resulting from such a course, would be of value not easily estimated. Imagine the pleasure with which a farmer or practical gardener would watch the growing interest in real things manifested by the children. Only good would come if drafts were made upon the experience of such persons for assistance in this work. The exercises of Memorial Day might be rendered more impressive by gifts of flowers from the school gardens and, if the sick room of a pupil or a friend of the school was cheered by the same kindly remembrance, the act would bring a double blessing.

The relation of the trees and shrubs of the school yard to the birds is an interesting subject of study. Trees will attract the birds and, if they are welcomed and protected, their presence will be a constant pleasure. Unfortunately the English sparrows have usurped the places of our native birds to some extent in our



village and city streets. The protection of birds secured by recent legislation and by the renewed interest in the study of them, has already borne good fruit. That thirty-five different species were seen in one morning before school within half a mile of one of our high schools is an illustration of what we may expect where birds are kindly treated.

The new science of forestry is vital to the interests of our country. It is seeking to solve some of the most important economic problems and some of its elementary principles may be illustrated by the trees upon the school grounds. The trees will also speak to teachers and pupils in a many-voiced and most interesting language. The rustling of the leaves, the sighing of the wind through the branches, the hush that precedes the storm, or the roar that accompanies it, each has its music and charm.

If the school grounds are to be made "vacation centers," according to recent methods, then there is all the more reason for making them beautiful. The value of the refining, elevating influence of the beautiful is beyond estimate.

#### IMPROVEMENT OF THE EXTERIOR OF SCHOOL BUILDINGS.

That the school buildings should be kept well painted might go without saying, were it not that the rule is disregarded in too many instances. If the house is tasteful in design, painting may be the only thing needed. A house should certainly be painted when necessary, since paint nearly or quite pays for itself in the protection it gives to the woodwork. Indeed it is almost an axiom that paint costs nothing. The improvement in appearance is therefore a matter of slight expense. The school house should compare favorably in attractiveness with the better class of dwelling houses in its vicinity.

In some cases additions, adding greatly to the appearance of the buildings, may be made at small cost. A cupola containing a bell would pay for itself in the time gained by increased punctuality of attendance; so that in this case also, the improvement in appearance would be so much gained. There are so many kinds of time in some communities that the ringing of the bell at regular periods would be of great service to the neighborhood as well as helpful in carrying out the school program.

The question of properly lighting the rooms is an important one in any school. Two or three windows may be grouped

together, new windows may be inserted where needed, a change may be made in the paneling, or small panes may be replaced by larger ones.

The roof may need shingling and the shingling may be extended half way down the sides with good effect; the entire shingling to be stained some tint harmonizing with the color of the clapboards below. The projection of the roof at the gables or the eaves may be extended to produce the best effect. Dormer windows may be inserted in the roof to light a hall for storage or other purposes. A neat vane, with indicators for the four cardinal points of the compass, may be added to the cupola. The entire building may need to be raised and a new foundation placed under it. A few vines and climbing plants may be used to soften the stiffness of the exterior and groups of low shrubs planned to break the hard lines between the wall and the ground.

It would be money wasted to attempt to repair a building hopelessly antiquated and too small for its purpose and in such case a new building is the only remedy. This necessity will give opportunity for change of location, if that be best, so that the new house may be built on more suitable grounds and each add beauty to the other. One mistake, often made, should be guarded against. Do not build a two-room building of two stories, unless the rooms are much larger than usual; but build a one-story house with the foundation wall showing at least three feet above ground. Two rooms on one floor, with halls and cloak rooms between, are much better than a building with one room above the other. The two outer doors may be under one portico, if desired, and a covered driveway might well be added for use in stormy weather.

#### DECORATING THE WALLS AND CEILING OF THE SCHOOLROOM.

The wainscoting of the walls should extend from the floor to the lower part of the windows and of the blackboards and this wainscoting and the finish of the doors and windows and the doors themselves should be of yellow birch, oak, hard pine, or spruce, and filled with oil and covered with at least two coats of varnish well rubbed down. The floors should be of yellow birch or selected spruce and should be well oiled and then given two coats of shellac. The wall spaces should be plastered and tinted some light, soft color such as a cream, light gray, bluish gray, greenish yellow or buff. The ceiling should be still lighter than

the walls and, for this surface, a delicate cream is recommended. The blackboards should be of slate, or the best quality of adamantine plaster, treated with the best liquid slating. Their base line should begin two or two and a half feet above the floor and they should extend three and a half feet above this line. At the lower edge of the board should be placed a suitable molding with an upper concave surface to hold the erasers and to collect the chalk dust. A neat molding of gilt or of the same finish as the woodwork of the room, for hanging pictures, should run entirely around the room except over the windows. The blackboards should extend around the room except in the spaces occupied by the doors and windows.

The windows should be massed on the left side of the room, as the pupils are seated, beginning about one foot from the rear wall and extending so that the front window shall be opposite the front seat. The bottom of the windows should be on a level with the eye of the average pupil when seated in the room and the top should reach within a few inches of the ceiling. Opaque shades of Naples yellow should in every case prevent the direct sunlight from falling on the books of the pupils. In our climate it is better to provide double windows.

#### FURNITURE AND MEANS OF PROVIDING IT.

The best furniture devised by modern invention should be provided when possible. The best is none too good, considering the interests at stake.

The seats should in every case be so low that the feet of the child may easily and naturally rest upon the floor. Very satisfactory seats and desks are now made that can be adjusted with slight difficulty and these should be carefully considered in furnishing a new room. The single desk and seat should be provided for each pupil. A seat would better be too low than too high. In a school of a single grade the pupils will usually remain in their seats during recitation; but in a mixed or ungraded school, settees or other seats for the class reciting will generally be used instead. These recitation seats should also vary in height with the size of the pupils who are to occupy them; but the lack of adjustment can more readily be borne than in the regular seats for study, as they are occupied for briefer periods.

A comfortable chair should be furnished for the teacher, and two or three common chairs for visitors. The earlier custom of sending to the neighbors to borrow chairs for the "committee" or others may well become obsolete. The teacher's platform should be nine inches high, at least five feet wide and nine feet long. A modern desk with lid and drawers with locks should be furnished for the teacher's use.

In one corner of the room should be placed a small table or plant stand on which should be two or three pots of growing plants and some place should be found for two or three vases of cut flowers, especially of the wild flowers in their season. Whatever brightens the schoolroom and adds to its attractiveness is of service. We tire of seeing the same things day after day. Like the trifling features of dress,—a bow, a ribbon, a tie, a pin,—the flowers and other ornaments have their value enhanced by frequent renewals.

A neat library case is needed for reference books. Even if there is a library room in the same building it will not meet the want here indicated; the books needed must be at hand.

A pointer with rubber tip should hang by the side of every blackboard and sufficient erasers should be supplied so that there may be no borrowing. For slate blackboards a pencil of soft talc may be used with little injury to the surface, but for other boards, crayons as nearly dustless as possible should be provided.

How to obtain these necessary articles is an interesting question. The simplest answer is, pay for them from the contingent fund as other school bills are met. But here comes in the principle that people are interested in matters in which they have a share and the school in which the people are sufficiently interested to supply these simple needs is favored to an extent far beyond what the money value of the things given would indicate. The stronger the bond between the school and the citizens the better for both and even better still if the School Improvement League, the Grange or the Civic League has a part in this work. A picnic held in one town for the purpose of raising money to purchase a bell for a new school building is an excellent illustration of what the people may do when they are interested in the school.

## A WORKROOM.

In every rural schoolhouse there should be a room about 9 feet wide and 12 feet long, in which should be placed a small workbench and a few of the common tools used by carpenters. There should also be a limited supply of lumber suitable for making the implements, utensils and apparatus needed in the home, on the farm and in the school.

The room should also be provided with a small cook stove, a few of the utensils used in the ordinary kitchen, a sewing table and such other apparatus as are needed in making the plainer articles of wearing apparel.

This room should be furnished by the people of the community in which the school is located.

The teacher should encourage the children to make use of this workroom in constructing the material needed in the school and the home and in preparing simple articles of food and in making some of the garments worn by the school children.

It will be much better if the teacher does not attempt to be severely scientific or technical. Most of the teachers do not and many of them cannot act as expert instructors in this work, but they may give general directions and, to an extent, oversee what is done. There will always be members of the school who will have an aptitude for the things in which the teacher has no special skill.

Let it be distinctly understood from the start, that the teacher is not an instructor in manual training and does not pretend to be; but that she and the children, working together, can provide many necessary articles.

Many blunders will be made and much material will be wasted, but neither of these items should be discouraging. Perhaps there is no better way of learning how to do a thing than by the mistakes one makes in doing it. The knowledge and skill thus acquired develop taste, judgment, ability to meet emergencies and at the same time stimulate originality and invention. Best of all, these activities furnish an opportunity for the children to train their hands while they are using their heads. They also develop self-reliance, independence and love of manual labor and a desire to be physically useful in the world.

A room provided with the material described above and used by intelligent teachers and ambitious pupils will help to give us



a student body that will be industrious, enterprising, skillful, self-supporting. It will help solve not a few industrial problems and will furnish a satisfactory answer to many troublesome moral and intellectual questions. It will help to keep the boys and girls in school and aid them in becoming intelligent and worthy citizens when they leave school.

There is a great opportunity for usefulness in this work and it is sincerely hoped that parents, school officials and teachers will appreciate the situation and make use of the advantages which such training will surely give.

See figure A for plan of schoolhouse that provides a room for the purposes outlined above.

#### BOOKS AND THE MEANS OF OBTAINING THEM.

The text-books used in school should be furnished by the town, without cost to the pupil. Reference books, such as dictionaries and encyclopedias and others treating of the subjects taught in the school, should be supplied from private or school funds. If there is a free public library that takes into its plan the needs of the school, there will be less call for going beyond the text-books and a few reference books for immediate use. Still it is very desirable, especially in the more advanced grades, to have at least a few well chosen books on different branches connected with the school work. Such needs will be especially felt in geography, where books of travel and description are of great service and in history, where several writers describe the events of the same period. In botany, "How to Know the Wild Flowers," "How to Know the Ferns"; in ornithology, the writings of John Burroughs, Bradford Torrey and Chapman's Manual of Bird Life; in literature, a select library of standard authors; in poetry, Tennyson, Browning, Shakespeare, and our own Longfellow, Whittier and Holmes will be found to be very useful. Promiscuous reading during a school course is of doubtful service, but to become acquainted with a few of the best books will be of greatest benefit.

Aside from the text-books to be purchased from the fund raised for that purpose, other books may usually be best secured by the assistance of the parents and friends of the school. In some cases it may be well to hold social gatherings or entertainments for securing additions to the library, but in many instances

a simple statement of the case by authorized solicitors will be most effective.

#### PICTURES AND THE MEANS OF SECURING THEM.

The walls of the schoolroom should be adorned with the portraits of persons whose lives may be studied with profit by the children. If possible some one favorably known in the community should be thus honored. Outside of local interests the list is large. Some of the pictures of Lincoln are excellent as are also those of Washington, Webster, Clay, Tennyson, Longfellow, Whittier and Shakespeare. The Angelus, the First Prayer in Congress, the Boy Christ in the Temple are appropriate for schoolrooms. The pictures need not all be purchased at one time. The collection should be a growth, rather than one made up from lists compiled at random. The friends of the distinguished graduate, or patron of the school, should count it a privilege to contribute his picture. The list should be so select that it would be an honor to be in it. Casts, busts and statues should be included in these collections.

#### UTILIZATION OF THE SCHOOL IMPROVEMENT LEAGUE.

The League furnishes a simple and practical organization for improving school grounds and buildings and for procuring and exchanging suitable reading matter and works of art. No machine runs itself; or if it attempts it, like a runaway automobile, it hastens its own ruin. The League will do great service if it unites the friends of our public schools, pupils, teachers, school officers and other citizens, in an effort to secure school improvement along the lines suggested. By its plan of library and art exchange, if it could be generally adopted, it would give to every school the opportunity of enjoying the use of many books and works of art, which it could not hope to have by its own efforts.

The School Improvement League of Maine differs from all other similar organizations in the following particulars:

1. Its specific objects include the entire circle of school interests as it provides for the social, civic and literary training of the children.

2. It does its work directly in every local school.

3. It makes the pupil, the parent and the teacher equal partners in the work of bringing the school into its best estate.
4. It holds each community responsible for the improvement of its own school.
5. It combines literary work with its efforts for material betterment.

#### GO SLOWLY.

Every great reform depends on time and patience for its success. It takes time for the inertia of ages to be transformed into the momentum of action. The interests at stake in school improvement are so weighty that the successful attainment of them will amply repay the efforts made as well as the patience exercised in waiting for them. The successes already gained justify and encourage still greater exertion. It is the first step that costs. Great progress has already been made. No one would be willing to go back to the earlier conditions common in our schools. In a few years, when broader and more liberal ideas have prevailed, the people, now so slow to move, will look back to some of our present appliances and conditions with as much surprise as we look back upon the past. Meanwhile with all due patience we must "learn to labor and to wait."

#### HAVE A WELL DEFINED PLAN.

A clear cut idea of the end desired and of the next step toward its attainment is necessary to the success of any undertaking. Anything worth the doing must be first wrought out in thought before it can be reduced to reality. It may not be best in every case to proclaim at the start how much you hope to accomplish; but by having a definite idea in your own mind of what the school and its surroundings should be, you can make every step taken count towards the end desired.

In the laying out of grounds, for example, there should be a general scheme with reference to which every tree or plant should be placed. Indiscriminate planting, too great crowding, putting plants together that are out of harmony with one another or with their surroundings, placing plants in conditions that prevent their proper growth, will defeat the end sought. Careful forethought is also necessary in the purchase of pictures, casts or books. The money in hand must be spent according

to some general plan and with due reference to what has already been done and with a clear knowledge of what you propose to do. Costly mistakes may easily be made at this point. The essential things should be done first and those that are simply desirable should wait. It is better to wait even for the essential things than to procure substitutes at nearly the same cost. Endeavor to get the best material procurable for the purpose desired. It is good economy to buy one good picture, book, or other article, rather than two or a dozen inferior ones. A thing that ought to be beautiful but is not, is a perpetual disappointment. The best is cheapest in the end; in the beginning, too, for that matter. The best people of the community, the ones you wish most to enlist in your work, will be more ready to help you if they find you are really determined to do something that is worth the while.

#### LEAVE A RECORD FOR THE NEXT TEACHER.

In the ideal school the same teacher continues year after year, growing into and with her work, always bringing the school towards its best estate. But such permanency is unhappily rare. Under our present system a teacher has hardly time to get her work well in hand before a call to another position, or some change of school authorities, removes her from her present task and puts another in her place. The new teacher comes to the school sufficiently handicapped at the best. There is necessarily a break in the work and a tentative feeling on both sides that interferes with satisfactory results for a time. Out of this may come changes that will benefit both teacher and school, but there is always a risk. A record of what has been done and what is planned will help to make the break, serious at the best, less harmful. Such assistance should be given.

#### REPORT WORK DONE TO THE STATE PRESIDENT AND STATE SECRETARY OF THE LEAGUES.

Organized effort makes it possible for the good work that is done in one city or town to be known in others and the influence of the example to be more widely felt. No town should commence the work of school improvement and then keep so still about it that no other town may profit thereby. The teacher should give to the public the story of what the friends of the



school have done for its better furnishing even if they have acted on her suggestion. Assuming that the school is allied to "The School Improvement League of Maine," it is a matter of duty to the organization to make a full and accurate report to its officers. By so doing the school touches elbows with other schools and thus gains courage for the struggle which makes bad conditions good and good ones better. The strength of union should do service for a good cause.

KEEP PERMANENT RECORD OF IMPROVEMENTS MADE AND PUBLISH EXTRACTS FROM THE SAME IN LOCAL PAPERS.

The same considerations apply even more emphatically to the keeping of permanent records, in a suitable book, not on loose sheets of paper, and to publishing the salient items in the local papers. Such records have immediate value and as time passes will be of increasing importance as historical material. The history of education is one of the central figures in the progress of any people. Remarkable changes have taken place in educational means and methods within the memory of persons now living. The influences of these changes upon the character and standing of the Nation would be difficult to estimate, still more to overestimate. As landmarks of progress, it is important that the items of a school history should be preserved. The history of the past has been largely a record of wars and bloodshed; the history of the future is to be a chronicle of the more beneficent conquests of peace. When nation shall vie with nation in extending truth, righteousness, education, progress, then we may know that the millenium of universal peace is near at hand.

Local educational movements should seek the aid of the newspapers. The local paper may be as important in its sphere as the metropolitan paper in its wider territory. No cause that seeks public favor can afford to disregard the power of the press. It is important that school matters be treated by it in the right spirit. The secretary's record may serve for the members of a society, but the local papers should bring the chief points to public notice. The knowledge of good work done by some quiet toiler will often bring assistance from unexpected sources. What interests can be more vital to the people than those connected with our public schools? As these schools lie at the very foundations of our free government the utmost care should be

taken to keep their influence pure and strong. Records and reports of progress made will inspire efforts for still further advancement and if, at any time, emergencies should arise demanding special help it is still more important that the facts be promptly made public in order that immediate action may be taken.

It may be an appeal to selfish motives, but if proper credit is given through the press for work done or assistance rendered, it may stimulate still further efforts in the same direction. It is only natural that people should like to have their assistance appreciated. The acknowledgment of benefactions received or the report of work done for the school, made in the right way, in the spirit of true gratitude, will be welcomed as a fitting act of courtesy and may easily lead to further assistance from the same parties or from others. Such reports may have an influence broader than the mere locality. Copied from paper to paper as items of news, they go forth like good seed and may bring forth good fruit in unexpected places.

The primal instinct of service lies dormant in many a soul, waiting for the touch of encouragement and opportunity to call it into action.

## SCHOOL YARDS AND BUILDINGS.

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In one of the reports of this department a somewhat detailed statement was made of the condition of the school yards, outhouses and school-buildings in the rural sections of the State. Many inquiries have been received which indicate that a general interest has been aroused in these matters. To assist in improving the schools in these particulars the following plans, sketches and explanations have been prepared. In doing this work the fact has been constantly kept in mind that the suggestions furnished should be especially serviceable to towns having but small sums to invest at any one time.

In presenting these suggestions and explanations as to the selection of lots, construction of outhouses and school-buildings no attempt will be made to present arguments in favor of the positions taken, or to quote authorities upon these subjects.

The statements made and the recommendations offered in this connection are addressed more particularly to rural and village communities. Any attempt to furnish detailed plans for buildings in cities, without exact information as to the size, location and surroundings of the lot, the system of sewerage, water supply, heating, etc., to be used, would result in a failure. For these reasons no attempt will be made to cover this field.

### SCHOOL SITE.

In selecting a site for a school-building the principal items to be considered are size, soil, drainage, sightliness, and location in the community using the schoolhouse. The lot should have an area of not less than one acre, with a frontage of about 180 feet and a depth of about 240 feet. It should not have beneath it a stratum of clay or ledge which will permit of

ground-water standing in the yard, but should have a light, porous, dry soil. It should be free from all decaying matter and all animal excrement.

The surface of the lot should slope gently toward the road or street, and have a sufficient elevation so that all parts of it will drain naturally. If for any reason this result is not possible through natural means, artificial drainage should be supplied which will remove all surface and ground-water. The best lot is the one which is highest in the center and slopes gradually in all directions, and is higher than the immediate surrounding areas.

The lot selected should have as many natural features of beauty as possible, and should be as slightly as circumstances will permit. It should not be in a low, damp place, and it is better that it should not be on the top of a bleak hill. A slightly rolling area in a reasonably sheltered section is the most desirable. The building should be so located as to give a sunny playground, and yet prevent, as far as possible, the direct rays of the sun from falling upon the desks during school hours.

Great care should be taken in selecting a lot for a school-building either in the country or in a village, to have it so located that the school will be as little disturbed as possible by passing travel and by industries that are carried on in the community. Reasonably quiet surroundings are essential conditions for the best work in the classroom. The disadvantages of dust and other annoying conditions are too apparent to need special mention. A community cannot afford to sacrifice quality of soil, sightliness, elevation, drainage and quiet to the single item of central location.

The school-building should be placed about 100 feet from the street or road and as near the center of the lot from right to left as the conformation of the ground will permit. In most school yards in the country the outhouses for the girls should be in one of the rear corners of the lot, and that for the boys in the opposite rear corner.

The fence at the rear of the lot and the sides as far front as the rear of the school-building should be a close board fence about 5 feet high. The fences for the sides, from a point opposite the rear of the building to the street or road, should be about 4 feet high and of such construction as the means of the town



will justify. There should be a strong, close board fence, 7 feet high, extending from the center of the rear of the building to the center of the rear board fence.

No trees should be placed within 50 feet of the building. The area immediately in front of the schoolhouse should be used for flower beds. The open spaces at the sides and rear should be used for playgrounds. A few trees should be planted near the boundary lines of the lot and in some instances trees may be advantageously planted in interior sections of the lot.

#### WATER SUPPLY.

Every school-building should be supplied with pure water. The best way of doing this is to have water conducted through pipes to the building from a spring that is some distance from any polluting agencies. Where this plan is not feasible the next best method is to have a bored well of such depth as will render it impossible for the water to be contaminated with surface water or filterings through the soil. Where a bored well is not practicable then a well should be dug, and every possible precaution used to prevent contaminating matter of any kind from reaching the well itself, or the sources of its supply.

#### OUTHOUSES.

The outhouses should be located, as has already been indicated, in the rear corners of the school lot, one being assigned to the girls, and the other to the boys. These buildings should be substantially built, of such size and with such conveniences as will best serve the school for which they are constructed. The vault should be a solid tank of masonry, plastered on the inside with cement. (See Figure A in another section of this report.) If for any reason this kind of a vault cannot be supplied a wooden box, extending the entire length of the sittings, and about 20 inches deep and 24 inches wide should be furnished. In cases where a box is used it should be lined with galvanized iron and great care should be taken to have the lining water tight. In both cases such an amount of dry soil or ashes should be frequently placed in the receptacle as will absorb all liquids in the vault and keep the excreta covered.

In outhouses provided with wooden boxes for vaults the lower, rear portion of the building should be a heavy double door with hinges at the top, so arranged that it can be turned up against the wall and held in place by a clasp while the box-vault is being emptied. These vaults should be thoroughly cleaned, at least, twice each term. When these precautions are taken we shall be free from the fearful odors which sometimes are manifest not only on all parts of the school grounds but which penetrate even to the schoolroom itself.

If those who have charge of the erection of school-buildings have any reason to fear that sufficient dry earth or ashes will not be applied to the contents of the vaults to absorb all liquids and keep all excreta thoroughly covered, and that all this accumulation will not be removed at least twice each term, then they would better use the plans described below. These explanations and sketches are taken from the Report of the State Board of Health of Maine for 1892-3. (See Figures B and C.)

"There are some patented devices for using the dry earth, but without patronizing these, any carpenter or other person with only ordinary mechanical ingenuity can get up something which will give good results. All that is needed is a common closet, a supply of dry earth, a water-tight receptacle beneath, and a convenient way of disposing of its contents at quite frequent intervals.

"The receptacle should be wholly above the surface of the ground and may consist of a metallic-lined box, a half of a kerosene barrel with handles upon it for removal, or, which is better, a large galvanized iron pail.

"The receptacle may be removed through a door in the back of the closet or in front of the seat, or, by having the seat hinged and made to button backward, it may be removed that way. The earth should be common garden or field loam, if considerably clayey all the better, but it must be finely pulverized. Road dust does well, but sand is not suitable. Coal ashes are also good. Whichever of these is used should be dry and screened through a sieve with about quarter-inch meshes. The dry earth may be kept in a box or bin so arranged, where it can be, that it may be filled from the outside of the closet, or it is quite convenient to have one-half

the seat hinged and beneath it the small compartment to hold the present supply of the earth. In this box or bin holding the earth there may be a small tin scoop which may be employed in sprinkling in the earth, a pint or more, each time the closet is used. The main thing is to use enough of the earth completely to absorb all liquids, and this requirement, of course, precludes the throwing of slops into the closet. One or two loads of dry earth will be needed annually for a small school. Figure B in another part of the report shows the construction of this closet.

"Figure C shows a style of earth closet suitable for country school-buildings. It has a permanent catch-basin entirely above the surface of the ground built of brick laid in cement and lined with asphalt so that the water or moisture from the soil can have no entrance.

"Within the closet is a bin for dry earth or coal ashes and a scoop by means of which it should be somebody's duty to sift daily or oftener a small quantity of the drying material over the deposit,—enough to keep the whole dry and odorless. At the rear of the vault is a door through which the inoffensive contents may be removed."

The outhouses should also be provided with windows the stools of which should be not less than 5 feet from the ground. The doors should be substantially constructed and provided with strong locks. The keys should be in the custody of the teacher, and the doors locked each night. This duty may be performed by some of the older and more reliable boys. The buildings should also be surrounded with evergreens in such a way as to conceal them from the road and the occupants of the school-house. The entrances should be from the sides facing the fence extending from the rear of the school-building to the rear of the lot.

In cases where towns wish to build fire closets, or water closets and urinals supplied with running water, they should depend on experts to supply detailed directions for constructing these important adjuncts to every schoolhouse.

#### SCHOOL-BUILDING.

The foundation walls of the school-building should be of solid masonry, and extend to such a depth as to prevent their

being affected by frost. The walls should be 1 foot thick and have a vertical air space of 4 inches, and be so thoroughly built as to exclude the cold to a considerable extent. There should be a suitable opening in the wall on each of the four sides to permit thorough ventilation of the space beneath the building during the spring, summer and fall months. Double shutters should be provided for these openings during the winter months. These conditions should obtain in all cases where it is not found expedient to have a basement, but wherever the funds are sufficient, a basement of not less than 8 feet in depth should be provided. This should be inclosed by the foundation walls, and the bottom should be covered with gravel and plastered with the best cement, and such drainage should be provided as will prevent water remaining in the basement.

The top of the foundation wall should be, at least, 3 feet 6 inches above the level of the ground. In no case should school-buildings exceed two stories in height. The reasons for this limitation have been given in so many reports that it is unnecessary to recapitulate them.

The exterior of the building should be simple in construction, yet dignified in its adornment, and devoid of all ornamentation which interferes with suitable lighting of the assembly room.

#### COLORS FOR EXTERIORS.

While it is not desirable that school-buildings should present a marked similarity in coloring, yet it is important that such colors should be used on the exterior as will render the houses not only durable but also attractive. For this purpose the colonial style of light yellow with white trimmings furnishes a happy combination, and is a change from the more sombre browns that are now so common. The gray tints with darker trimmings and the light yellow with dark green trimmings are both serviceable and attractive. In some cases plain white walls with green blinds make a picture at once artistic and inexpensive.

#### HALLS AND WARDROBES.

The entrance to the house should be protected by a suitable portico of such construction as will permit the children to make use of it for shelter in stormy weather and serve as



a protection from the sun on hot days. The entrance and halls should be of sufficient size to allow the free passage of the pupils to and from the schoolroom, and to insure perfect ventilation.

In single-room school-buildings, if separate entries are provided for the boys and girls, these apartments should be at least 8 feet square. In schoolhouses of more than one room they must necessarily be more spacious. The hallways in all school-buildings, of more than one room, should be wide enough to admit of the passing of double columns of children in opposite directions at the same time with perfect freedom. In single-room buildings the hallways need not be more than 6 feet wide while in school-buildings of more than one room they should be not less than 8 feet.

Wardrobes should be large enough to furnish each child with a separate hook so located that his clothing, when in place, will not come in close contact with that of any other child. A wardrobe for 25 pupils should have wall space equivalent to 25 feet in length. These rooms need ventilation to even a greater extent than do the schoolrooms.

Entries, wardrobes and halls should be located in such relations to the schoolroom that the teacher can stand at some one point and have a general oversight over them all; because there are times during school hours when some of the children are in the entries, some in the hall leading to the schoolroom, and some in the wardrobe, while others are in the assembly room.

#### STAIRS.

The stairs should be, at least, 5 feet wide, and in case of two or more schools in the same building they should be from 6 to 7 feet wide. The risers should be from 6 to 7 inches high, and the threads about 12 inches wide. Circular stairs should never be built in a school-building, and as few turns should be made in the stairs as possible. What is true of the anterooms is also true of the stairways. They should be so arranged that a teacher may stand at one point and command easily the staircase, the halls and entrances. A great amount of confusion and unnecessary friction would be prevented by observing these simple rules.

## SIZE OF ROOMS.

Schoolrooms should be from 2-3 to 3-4 as wide as they are long. The length should not exceed 30 feet, a few feet less being preferable. The height of the schoolroom should be more than 11 feet and less than 14 feet. The floor space must be of such size as will give to each child not less than 20 square feet. If the schoolroom is 30 feet long, 20 feet wide and 12 feet high, it will contain 7,200 cubic feet of air-space. If there are thirty pupils in attendance the room will provide 240 cubic feet of air-space for each child. This is the minimum limit. No schoolroom should furnish a smaller air-space for its pupils.

The teacher's platform should be at the side of the room which is not provided with windows, and not less than 5 feet wide and about 9 feet long. It should be about 9 inches high.

## WINDOWS.

All things considered it is best to have the school-buildings face the south or west. If this plan is adopted the windows will be located on the east and north, or west and north sides of the schoolroom. The windows should be supplied with opaque, Naples yellow shades. When the sun is in the east the curtains on the east side of the room should be drawn. The same is true of the west side in the afternoon. With these precautions against the direct rays of the sun all parts of the room may be thoroughly lighted, and at the same time cross lights which otherwise might be of great injury to the eyes of the children would be avoided.

The windows should be in the wall at the left of the pupils when they are seated at their desks. The rear window in this wall should be within one foot of the rear wall, and the front window should be opposite the front row of seats.

The area of the glass in a schoolroom should be equal to one-fifth the area of the floor-space; i. e., if the room is 28 feet long and 22 feet wide, the floor would contain 616 square feet, and there should be at least 124 square feet of glass.

If the side wall does not furnish a space large enough to give an area equal to one-fifth of the floor space, then windows should be placed in the rear wall. These windows should be

located at the right and left of a center mullion, and should be of the same vertical height as those in the side wall.

The bottom of the windows should be on a level with the eyes of the majority of the children occupying the room. They should extend to within about 6 inches of the ceiling. The windows at the sides should be massed with narrow mullions between the different divisions. There should not be any windows in front of the front row of seats (not desks) in any schoolroom. It is better to have the glass the full size of the sash in all windows. If these simple rules are followed our children will suffer much less in the future than they have in the past from improper lighting of schoolrooms.

All window sashes should be so constructed as to fit closely in their casings, and at the same time run easily. They should be supplied with pulleys, friction rollers and such weights as will permit them to be moved with ease by a small child. As a matter of economy it is best to have all school-buildings supplied with double windows. The saving in fuel will be sufficient, in a reasonable length of time, to pay the added expense. If double windows are furnished, many of the discomforts arising from draughts will be prevented, and the windows can be used in such a way as to supplement the regular system of ventilation.

#### BLACKBOARDS.

The blackboards should be, at least, 3 feet 6 inches wide, and extend entirely around the room, except in the spaces occupied by the doors and windows. In schoolrooms used exclusively for primary grades the lower edge of the board should be about 2 feet from the floor, and in grammar and high school grades the bottom of the board should be about 3 feet from the floor. School-buildings in rural communities should have the bottom of their blackboards about 2 feet 6 inches from the floor, to best accommodate all grades of pupils, provided the board is 3 feet 6 inches wide. At the lower edge of the blackboard a moulding should be placed with a concave upper and a convex under surface, the trough part being used to hold the erasers and collect the chalk dust.

## INTERIORS.

In many of our school-buildings too much attention has been given and too much money expended on exterior decorations. While the appearance of a school-building is a matter of so much importance that it should receive careful attention, and while it should be as attractive as the means of the community will justify, yet it is the interior that will exert the greater influence for good or evil in forming the tastes and developing the qualities of the children. The exterior should be comely and attractive, and devoid of any appearance of extravagant decoration. The finish for the cornice, windows, doors and porticoes should indicate taste, judgment and regard for architectural principles. The interior of the room depends more upon its coloring than upon any other single feature. The finish for the doors and windows should be plain, so that the least number of places for the accumulation of dust will be provided.

The room should be surrounded with a wainscoting extending from the lower part of the blackboard and windows to the floor. The spaces above the wainscoting and ceiling should be plastered with mortar, slaked and mixed with sand, at least four weeks before it is used. During the time the mortar is being slaked it should be carefully protected from the sun and rain.

## FLOORS.

The floors should be of yellow birch. If this material is not within the means of the community, then a superior quality of spruce may be used. The floor surfaces should be "filled" with oil and treated with two coats of shellac. All schoolrooms should have double floors, with heavy building paper between, being careful to have the edges overlap to prevent the air passing from the basement to the schoolroom.

## DOORS.

There should be no thresholds in any part of the building except beneath the outside doors. All other doors should swing level with the floor, and should be provided with transoms at least one foot in height. All interior doors should be at least 3 feet wide, and not less than 7 feet 6 inches high. All outside doors should swing outward, unless they are double hinged.



## INTERIOR FINISH.

The interior finish of a schoolhouse should be of yellow birch, native oak, hard pine or a superior quality of spruce, the desirability of the woods being indicated by the order in which they are named. It is recommended that this wood be "filled" and covered with two coats of varnish, each coat being well rubbed down. In all interior finish it is desirable to have as smooth and plain a surface as possible to insure cleanliness. It is much better to have all the interior finish, including the doors, of the same kind of wood.

## COLORS FOR INTERIORS.

If it is necessary to paint the wainscoting it should be of such a color as is produced by adding a small amount of raw sienna and chrome yellow to white paint, giving the tint known to painters as "cream white" and the standing finish should be of a slightly darker shade of the same color.

The wall spaces not occupied by the blackboards or wainscoting should be tinted a light cream, very light gray, light bluish gray, light greenish yellow or a light buff. In all cases the tints should be of the lightest and most delicate shades. The ceiling should be a very delicate cream tint.

The floor should be the darkest surface in the room. The wainscoting should be of a somewhat lighter color than the floor. By this plan the colors become lighter as you pass from the floor to the ceiling.

## LIGHTING.

Much has been written on the subject of the proper lighting of schoolrooms. A number of the leading authorities upon this subject claim that the light should come exclusively from the north, and that the other sides of the room should be solid walls. There are more things to be considered in a schoolroom than the simple question of the direction from which the light shall enter the room. Thoughtful teachers have noticed that children are influenced by their feelings, and that the feelings of the average child are dependent upon the cheerfulness of the room. If only the north side of a room is provided with windows it is necessarily wanting in the elements of cheerfulness, and those conditions which are dependent upon the rays of the sun.

There can be no question but that the healthfulness and desirability of a schoolroom is very much increased by having

the rays of the sun shine into it during some portion of the day. The flooding of the schoolroom with light will prevent or make impossible a great many diseases and a large number of discomforts. It will aid, to a large extent, in making the room a place where the children like to assemble and live. It will give an air of graciousness to the room that can be gained from no other source. It is unwise to have the direct rays of the sun fall upon the children, and particularly upon their books or desks. It is also unwise to have cross rays striking upon the books used by the children. While all these things are true, it is also true that windows may be placed upon the east and north or west and north sides of the room, and gain all the advantages that come from light, heat and cheerfulness of the sun without suffering from many of the disadvantages named above.

The principal light of the schoolroom is preferably taken from the northeast, north or east; the preference being in the order in which the points of the compass are named. Windows facing directly south or west should be avoided.

If the windows are supplied with opaque curtains of a light yellow tint, they can be so arranged as to cut off the direct rays of the sun, and the cross lights will be reduced to a minimum; and all the advantages of lighting from two sides and direct radiation will be gained.

#### DESKS.

Single desks should be furnished in all schoolrooms, the discomforts and annoyances arising from the use of double desks being so great as practically to prohibit their use. The desk and seat should be easily adjustable to meet the physical conditions of the child. The seat should be of such construction as will fit the curvatures of the body and make it easy for the child to do his work in an erect position, and it should be of such height as to permit his feet to be placed squarely upon the floor. The top of the desk should slant slightly toward the pupil, and be provided with a groove for holding pencils, and a covered ink well.

The desks for the smaller scholars should be so placed that the edge of the desk next to and in front of the child shall be 9 inches from the back of the seat in which he is seated. For intermediate grades this distance should be 10 inches; in grammar grades, 11 or 12 inches; in high school grades, 12

or 13 inches. This is a matter of vital importance. Nine-tenths of all the desks in the schoolhouses of Maine, and a large share of the other tenth, are so far apart that children are forced to lean forward in unnatural positions to make use of them in writing and studying.

The seats for the pupils in a schoolroom should be so arranged that they will face a wall in which there are no windows.

The aisles at the sides and rear of the room should be about 3 feet wide, and the others should be about 20 inches wide. There should be, at least, 5 feet of space between the front desk and the front edge of the teacher's platform.

#### VENTILATION.

The simplest and most effective form of ventilation in school-buildings in rural communities is to have a cold air box extending from an opening in the foundation wall, under the floor, to a point immediately beneath the stove. This air shaft should be as short and direct as possible. It should be about 30 inches square for a single-room building, and covered at both ends with a coarse wire netting, and about one inch inside of this netting, screens should be placed similar to those used in dwelling houses to exclude flies. The opening beneath the stove should be provided with a slide which may be completely closed during the time the room is being cleansed or swept.

The stove should be surrounded by a Russia iron jacket which should be fastened securely to the floor, and extended above the top of the stove, at least eight inches, and if the stove is not too high this extension should be one foot. The sides of the jacket should not be within six inches of the stove. By this simple plan, fresh air is admitted to the room in any required volume, and passed near the stove in such a way as to be warmed before it passes into the room.

The ventilating flue or chimney for schoolhouses of one room should be 30 inches square on the inside. It has been found best to have the smoke-stack made of thin cast iron or heavy sheet iron. This stack should be about 8 inches in diameter and placed in such position in the flue as to be most easily connected with the heating apparatus. The register which opens

into the ventilating flue or chimney should be about 28 inches square, and covered with a coarse wire netting, bordered by a moulding on the outside. This opening should be within 2 inches of the floor.

Any schoolhouse provided with these simple appliances for securing fresh air, and taking from the room the foul air, will be reasonably well ventilated at all times when the stove is used for heating purposes. At other seasons it will be necessary to ventilate through the windows and doors, or to have the register so arranged that it may be removed and a large kerosene lamp placed in the bottom of the ventilating flue. The heat generated by the lamp will be sufficient to insure an upward current of such force as to remove the vitiated air from the room.

The value of an open fireplace in a schoolroom cannot be overstated. The cost of its construction is small. The expense of supplying fuel in Maine for many years to come will not be large enough to be a serious item, and the benefits derived from its general use will more than compensate for any investments that might be made in this direction. If a schoolroom is supplied with a fireplace and the chimney is thoroughly warmed once during the day, a sufficient current will be produced to make it one of the most efficient means of ventilation that can be devised.

It is even recommended that school officials make the attempt to secure from the community using the schoolroom sufficient voluntary contributions to provide one of these heating appliances in every schoolroom in the rural sections of the State. They more than pay for their construction and maintenance by the added cheerfulness and attractiveness which they give to the room itself. The bright crackling fire produces an atmosphere so homelike that the children are unconsciously influenced not only to better conduct and better feelings, but to added industry and faithfulness.

When all these means have been used there is one other precaution that should not be neglected. All schoolrooms should be opened, at least, fifteen minutes in the morning before the opening of the session, a few minutes during the recesses, not less than fifteen minutes at noon, and not less than half an hour, and better still three-quarters of an hour after the close of school



at night. At these times all doors and windows should be wide open, and every facility furnished for the free passage of the air into, through and out of the schoolroom. School officials should see that the above requirements are faithfully observed by their teachers, and the observance of these instructions should be one of the conditions upon which they are retained.

It takes much less time to heat a room filled with pure than with impure air. If one has but an hour to heat a room, and it is filled with impure air, he can save time and fuel by using at least one-third of that time in thoroughly ventilating the room and the remainder in heating it. If a room is not ventilated at the close of the session the impurities in the air will settle, to a considerable extent, into the walls. When the room is heated the next morning some of these impurities will leave the walls and be breathed over and over by the persons using the room.

In an article prepared by the Department of Public Instruction of New York the following principles are laid down for the instruction of those having charge of the erection of buildings of two, four, six or eight rooms.

1. Two hundred cubic feet of air should be allowed for each scholar, provided the air is changed *continuously*.
2. The foul air should be taken out of the rooms at or near the floor.
3. The ventilating flue should be of sufficient capacity to take out the foul air.
4. The ventilating flues should always be heated, to be of any value in exhausting air.
5. The supply of fresh air must be sufficient to compensate for that taken out by the foul air shaft.

By the courtesy of Dr. A. G. Young, Secretary of the State Board of Health of Maine, this Department is able to present in this report plans of schoolhouses. The designs are of the highest value, and it is hoped that those who are interested in these subjects will apply to the Secretary for a copy of his report for 1891. This document should be in the hands of every person who is responsible for the housing and training of the children in the public schools of Maine, so that in the future when buildings are erected school officials will take advantage of the studies which have been made in this field and be able to protect the children from the punishments which have been inflicted upon them in the past.



FIGURE B.

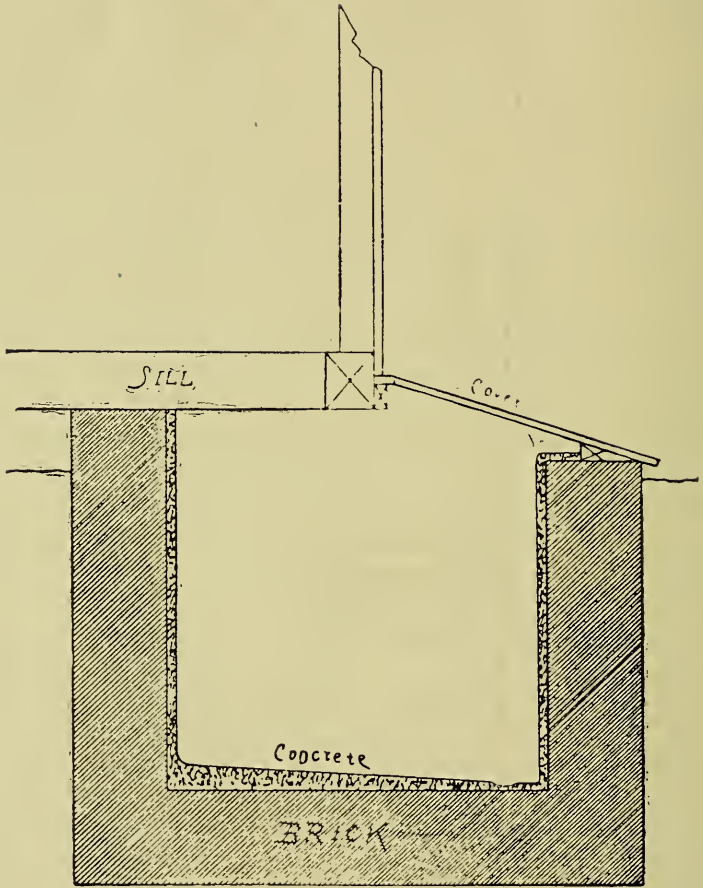
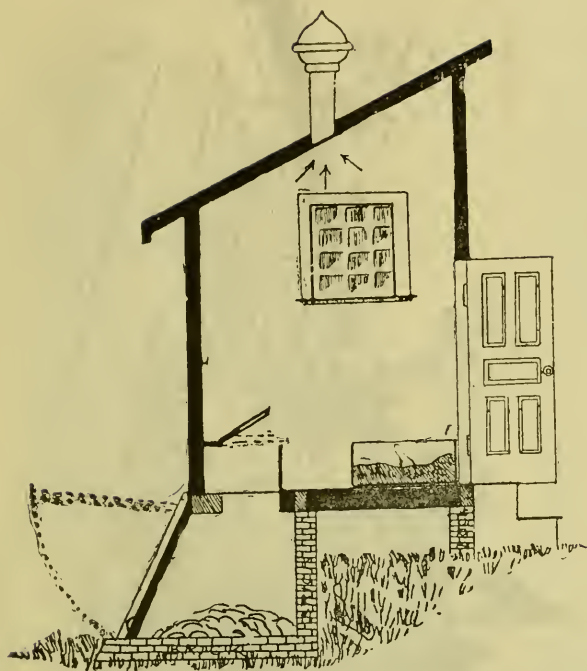


FIGURE A.

Section through vault for Small School Houses.  
Coombs, Gibbs and Wilkinson, Architects, Lewiston, Me.



Section.

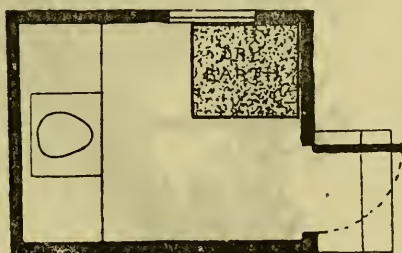
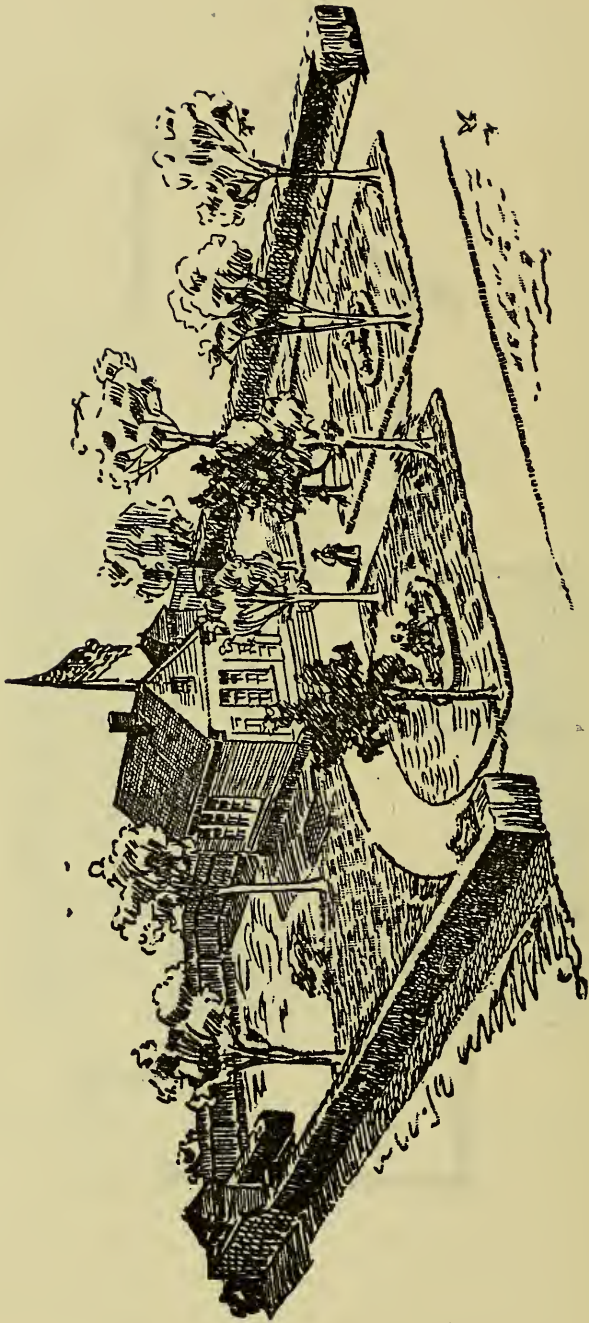
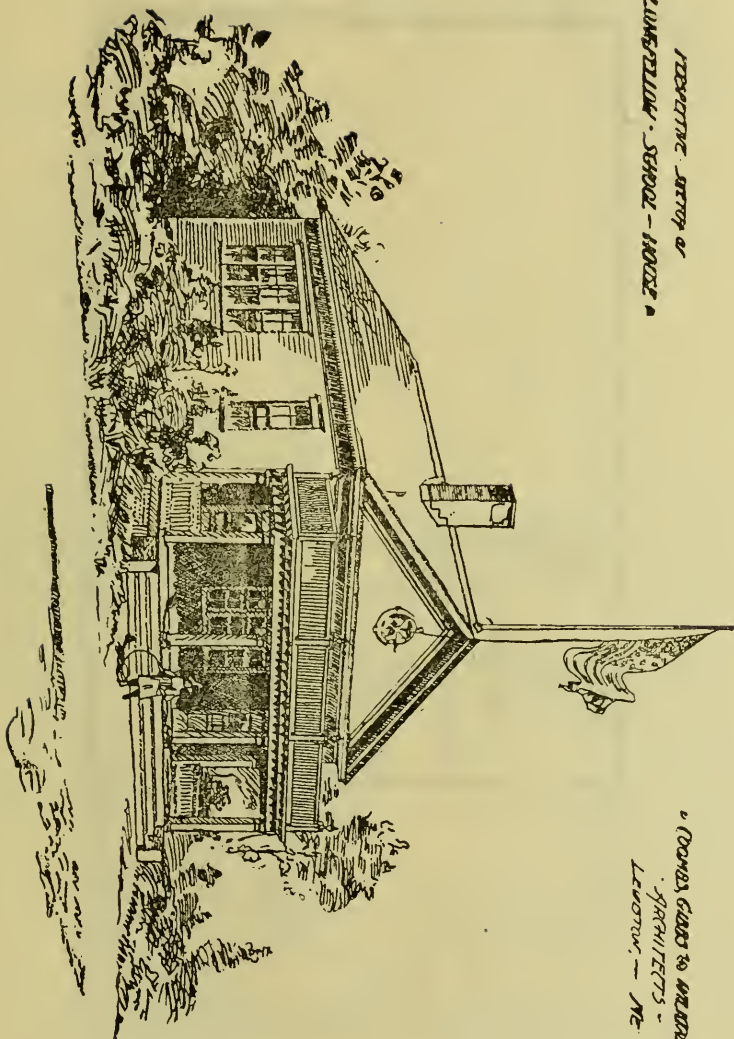


FIGURE C.

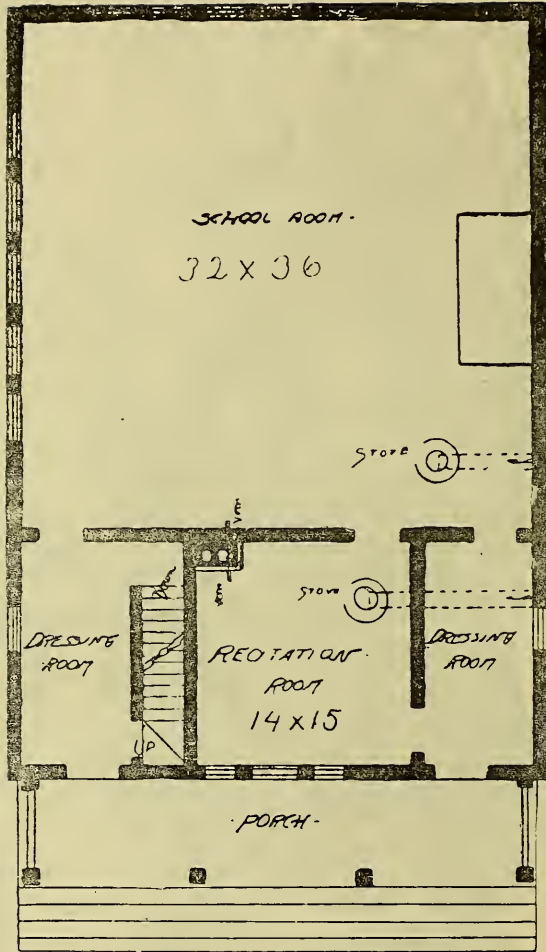




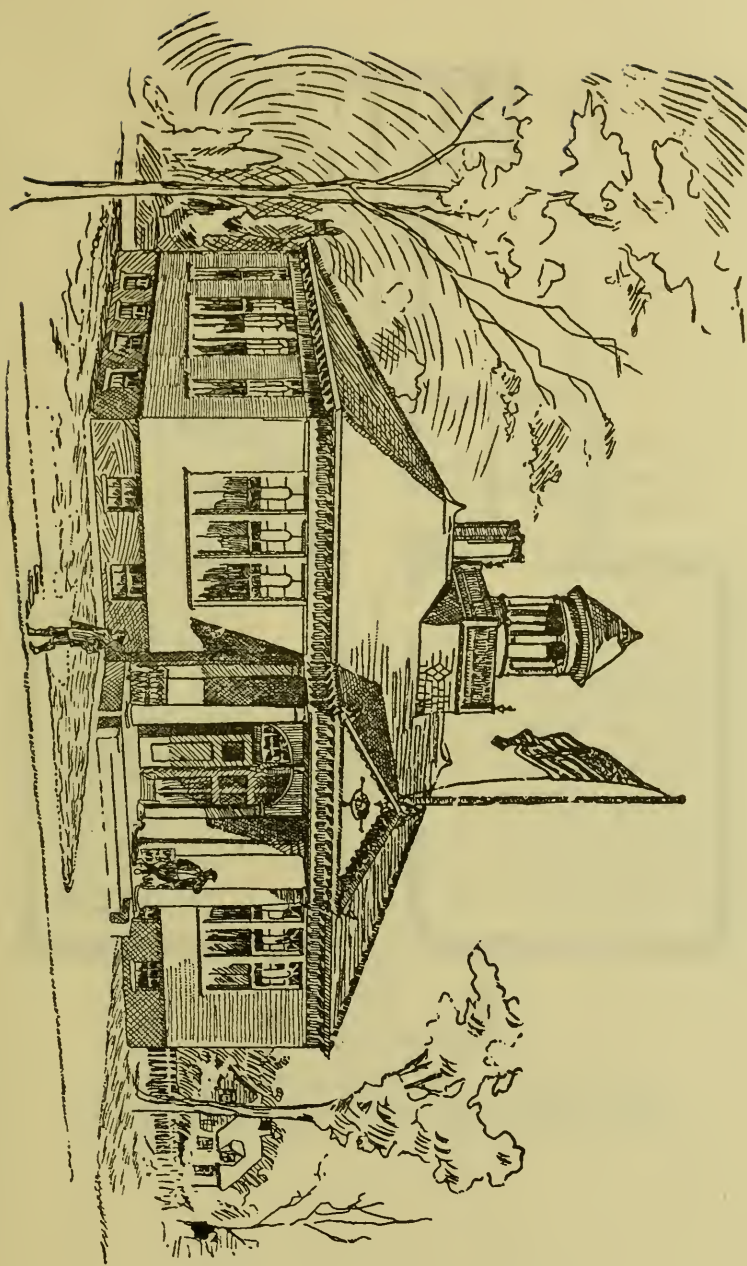
RECENT JERRY &  
LUMBERMAN - SCHOOL - HOUSE



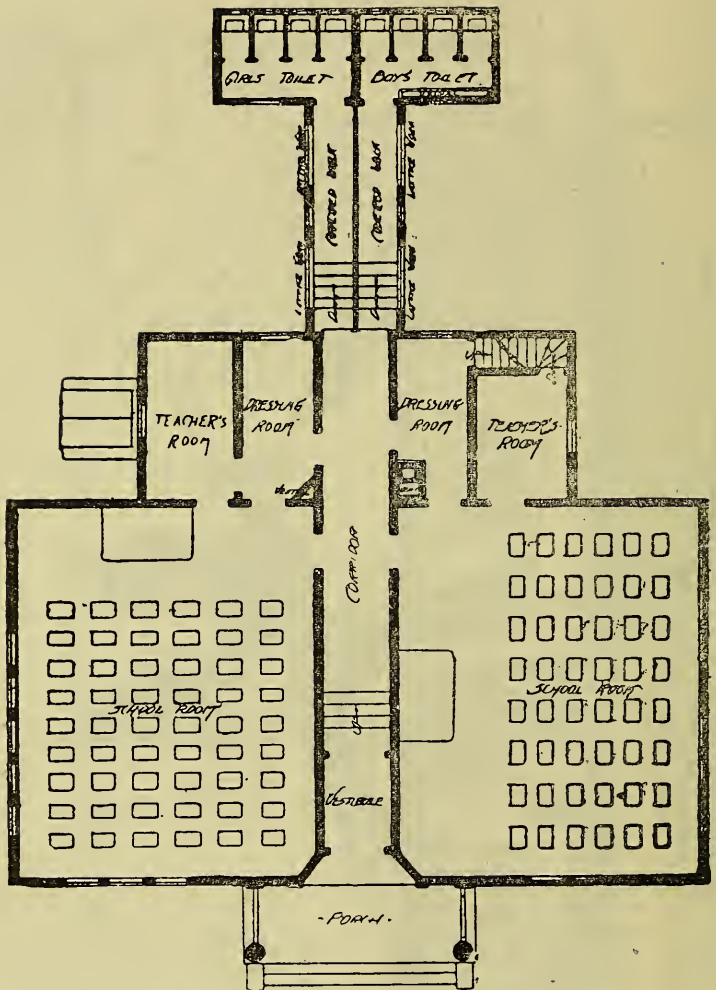
FROM GARDEN TO WILDERNESS  
ARCHITECTS - 1  
LEWIS - ME



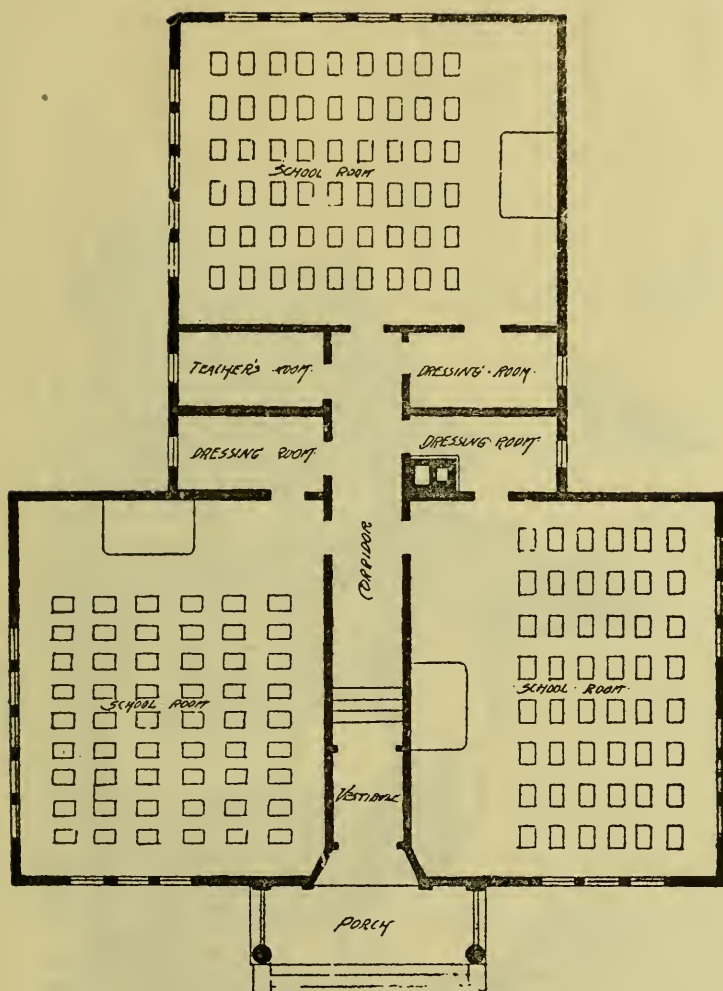
Floor Plan of Longfellow School House.  
 Coombs, Gibbs and Wilkinson, Architects, Lewiston, Me.



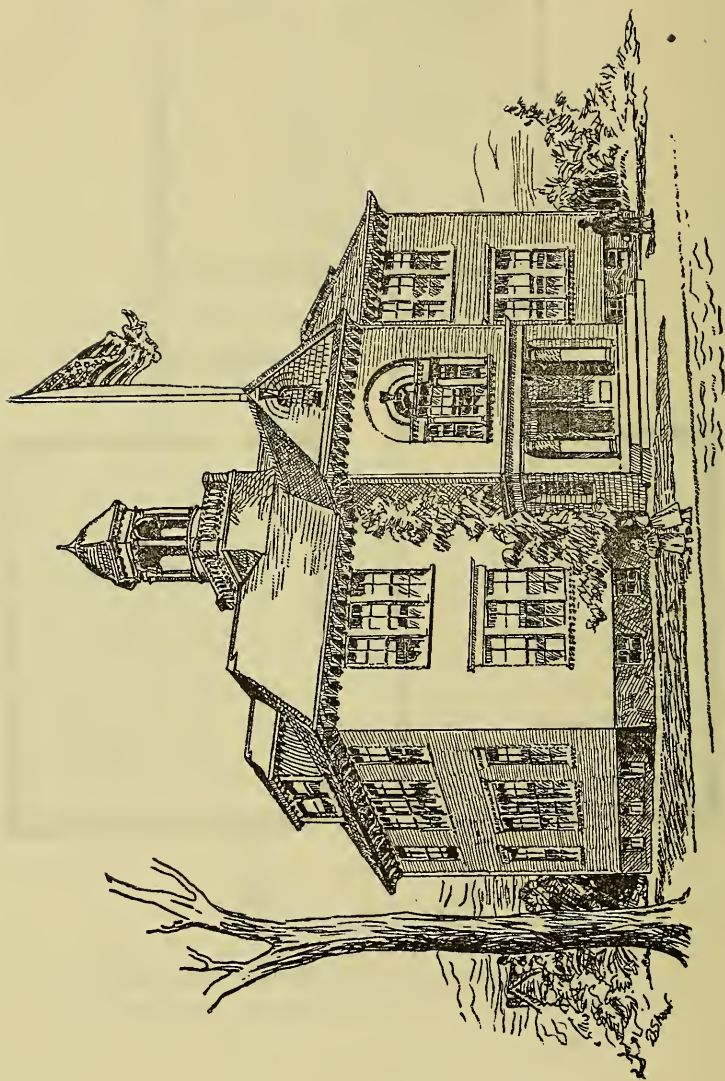


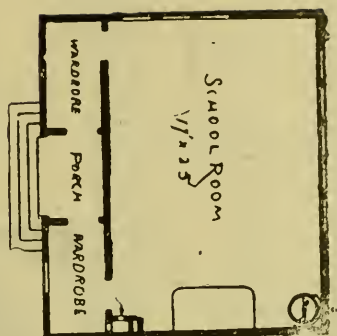


Floor Plan of Garfield School Building—two rooms.  
 Coombs, Gibbs and Wilkinson, Architects, Lewiston, Me.

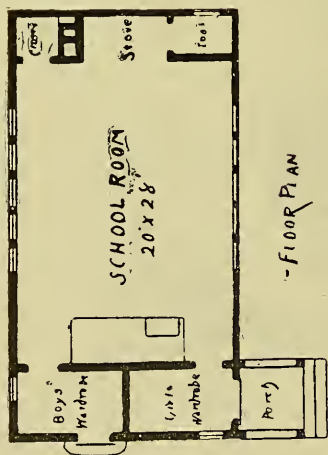


Floor Plan of Garfield School Building—three rooms.  
 Coombs, Gibbs and Wilkinson, Architects, Lewiston, Me.

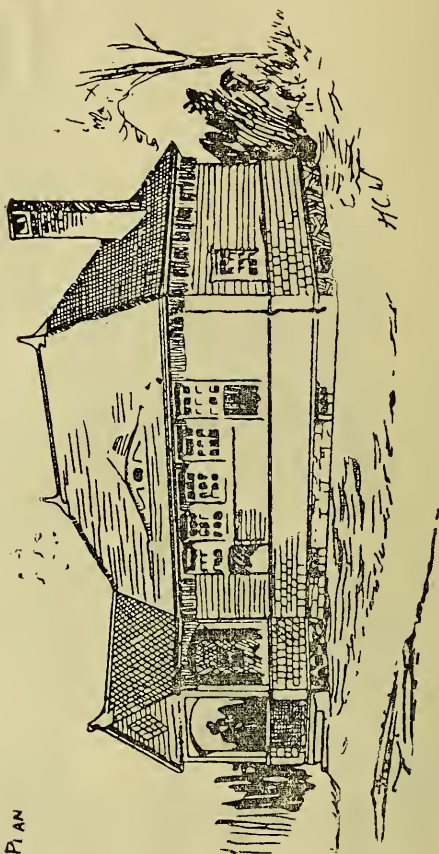


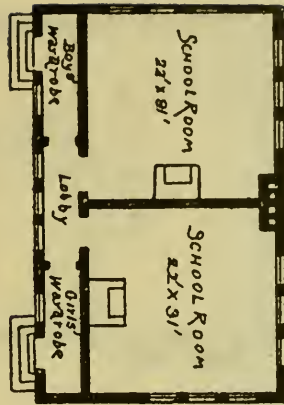




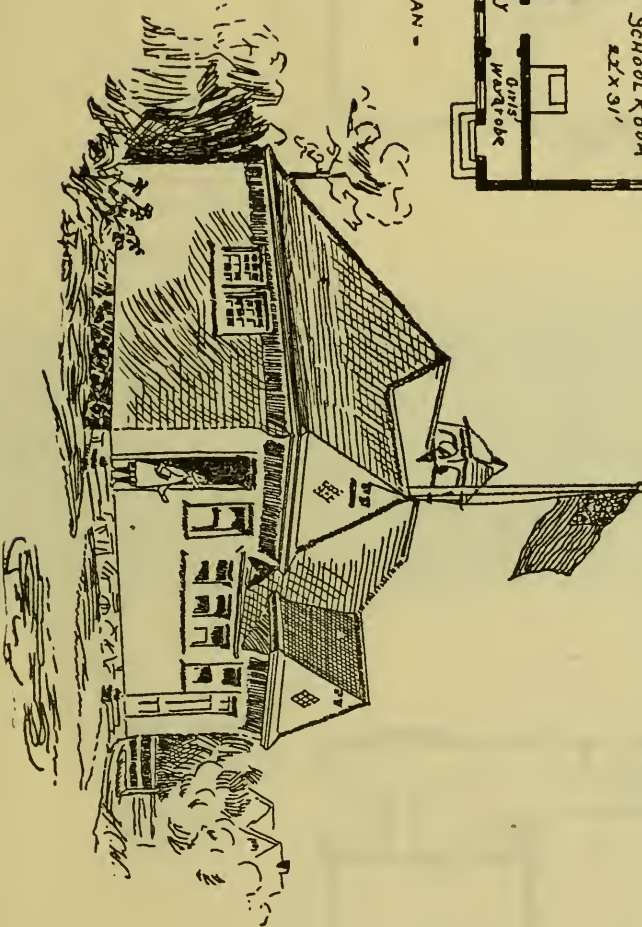


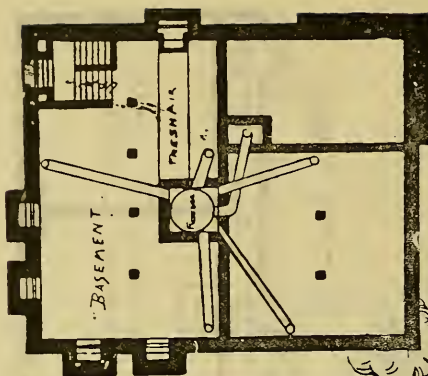
- FLOOR PLAN



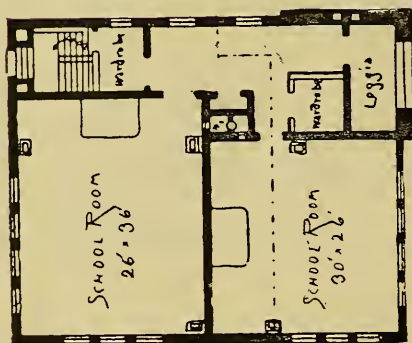


FLOOR PLAN -

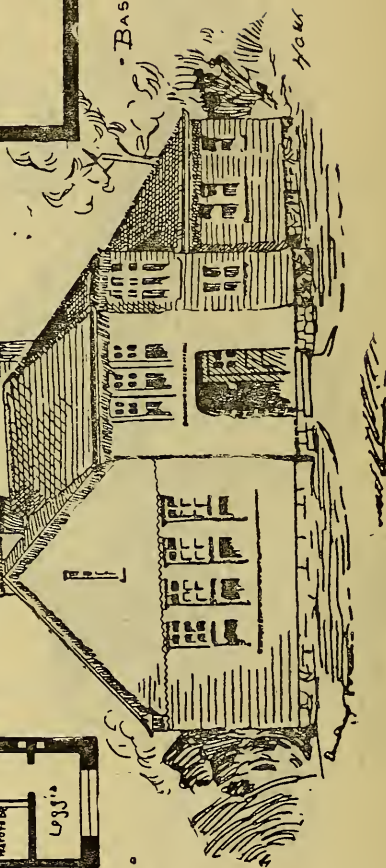




- BASEMENT PLAN -



- FLOOR PLAN -







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